DETERMINING CANCER-LINKED GENES AND THERAPEUTIC TARGETS USING MOLECULAR CYTOGENETIC METHODS

This application claims priority of U.S. Provisional Application Serial No. 60/550,304, filed 8 March 2004, the disclosure of which is hereby incorporated by reference in its entirety.

FIELD OF THE INVENTION

The present invention relates to Identification of amplifications / gains of genomic segments of DNA within human chromosomes in diseased states, such as cancer, that are demarcated and limited within specific chromosomal bands and defined herein as "amplicons" and whose disruption and/or change in expression is useful to distinguish cancerous from non-cancerous tissue and serve as potential therapeutic targets, pharmacodynamic /pharmacogenetic/surrogate and prognostic and diagnostic markers.

BACKGROUND OF THE INVENTION

Malignant tumors are a leading cause of death in the United States and one in four Americans is likely to die of cancer. This disease is often characterized by an increase in the number of abnormal, neoplastic cells that are ultimately derived from a normal tissue after which the cells proliferate to form a tumor, which can then metastasize (spreading into adjacent tissues or traveling elsewhere in the body via the bloodstream or lymphatic system).

The genomes of various well-studied tumors carry several different independently altered genes, including activated oncogenes and inactivated tumor suppressor genes. Chromosomal abnormalities have been identified in most cancer cells. Conventional chromosome banding techniques allow for the detection of specific chromosomal defects in tumor cells but interpretation of the banding pattern is sometimes difficult, particularly when complex chromosomal rearrangements or subtle abnormalities are present. In recent years, new techniques, such as CGH and SKY, based on fluorescent *in situ* hybridization (FISH) (Pinkel et al., Proc Nat Acad Sci USA 85:9138-42 (1988)) have been developed to overcome the limitations of conventional chromosome banding. CGH measures intensities of fluorescently labeled tumor DNA and normal DNA following hybridization to normal chromosomes (Kallioniemi et al., Science 258:818-21 (1992)). Gain or loss of copy number of a particular chromosome or chromosome region in the tumor DNA is determined by the relative intensity of a fluorescence ratio. SKY utilizes a cocktail of chromosome probes, fluorescently labeled to specify each chromosome, which is hybridized to tumor chromosomes in an effort to identify numerical and structural abnormalities in the tumor cell (Schröck et al., Science 273:494-7 (1996)). CGH and SKY have been used to identify chromosomal regions that harbor genes significant to the process of tumor initiation or progression.

The identification of amplifications of genomic DNA within well defined and demarcated limits on human chromosomes is done at a resolution of human chromosome banding limited to 400-550 bands by the technique of Comparative Genomic Hybridization (CGH). The present invention applies custom protocols to obtain human template chromosomes that are resolved to 850 to 1000 band resolution of human chromosomes (ISCN, 1985), to perform CGH on a large number of cell lines/ tissue samples/tumor cells. This allows the identification of regions of genomic DNA amplifications ranging from 2-5 Mbp at the highest limits of resolution of human chromosomes, detected by fluorescent intensity evaluations performed at the microscope.

Amplicons, or regions of interest,, from 10-20 Mb and more are also defined by these methods. These amplicons contain a gene, or genes, that are amplified (meaning copy number gains), and/or differentially expressed in the tissue/ cells of origin. Genes identified as being amplified and/or over-expressed provide targets for intervention with a small molecular therapeutic, antibodies, anti-sense or other therapeutic modalities. A gene or genes within these regions could also be used for diagnostic or prognostic molecular pathology characterization and useful as pharmacodynamic biomarkers for drug response profiling and patient sub-set selection and stratification.

BRIEF SUMMARY OF THE INVENTION

In one aspect the present invention relates to a set of genes that have been localized within human chromosomal regions of interest (ROI) that have been identified by molecular cytogenetic techniques. In particular, the present invention relates to chromosomal regions of interest, or amplicons, that are summarized in Table 1 and containing genes corresponding to cDNA sequences shown in the sequence listing described herein.

In another aspect, the present invention relates to a method for diagnosing the presence of a cancerous condition, or diagnosing a predisposition to developing a cancerous condition, in an animal, especially a human being, by determining the amplification and/or over-expression, of one or more genes corresponding to SEQ ID NO: 1-3049 in a cell, or tissue sample, obtained from an animal. The animal may be afflicted with, or at risk of developing, such a cancerous condition, or otherwise predisposed to develop such a condition.

In a further aspect, the present invention relates to a method for the treatment of a cancerous condition, especially one involving breast, colon, lung, cervix, kidney, pancreas and prostate tissues, utilizing selected chemical

agents having anti-tumor activity as identified using one of the assays disclosed herein.

Thus, in one aspect the present invention relates to a method for identifying an antineoplastic agent, comprising:

(a) contacting a test compound with a cell that expresses at least one gene corresponding to a polynucleotide comprising a nucleotide sequence of SEQ ID NO: 1 - 3049 and under conditions promoting expression of said gene; and

(b) determining a change in expression of said gene as a result of said contacting

wherein a change in expression indicates gene modulation thereby identifying said test compound as a gene modulating agent. In a preferred embodiment thereof, the change in expression is a decrease in expression.

In a further aspect, the present invention relates to a method for identifying a compound as an anti-neoplastic agent, comprising:

(a) contacting a test compound with a polypeptide encoded by a gene selected from SEQ ID NO: 1 – 3049,

(b) determining a change in a biological activity of said polypeptide due to said contacting,

wherein a change in activity indicates anti-neoplastic activity and thereby identifies such test compound as an agent having antineoplastic activity.

Preferably, the change in biological activity is a decrease in biological activity. Also preferred is where the biological activity is an enzyme activity, most preferably involving an enzyme selected from kinase, protease, peptidase, phosphodiesterase, phosphatase, dehydrogenase, reductase, carboxylase. transferase, deacetylase and polymerase. Also preferred is a biological activity that is a membrane transport activity, an integrin, a Cytochrome P450 enzyme, a nuclear hormone receptor, or a receptor activity,

such as a G-protein-coupled receptor. In other preferred embodiments, the polypeptide is contained in a cell.

The present invention also relates to a method for treating cancer comprising contacting a cancerous cell with an agent first identified as having gene modulating activity using any of the methods of the invention and in an amount effective to cause a reduction in cancerous activity of said cell. In a preferred embodiment, said cancerous cell is contacted *in vivo*, as where the agent is administered to a mammal, especially a human being, afflicted with cancer and in an amount sufficient to ameliorate the cancer.

The present invention further relates to a method for treating cancer comprising contacting a cancerous cell with an agent having affinity for an expression product of a gene corresponding to a polynucleotide comprising a nucleotide sequence of SEQ ID NO: 1 – 3049 and in an amount effective to cause a reduction in cancerous activity of said cell. Preferably, the expression product is a polypeptide and the agent is an antibody.

The present invention also relates to a method for monitoring the progress of cancer therapy in a patient comprising monitoring in a patient undergoing cancer therapy the expression of a gene corresponding to a polypeptide having a sequence selected from SEQ ID NO: 1 – 3049, preferably wherein the gene comprises a sequence of SEQ ID NO: 1 – 3049, such as where the cancer therapy is chemotherapy.

In a further embodiment, the present invention relates to a method for determining the likelihood of success of cancer therapy in a patient, comprising monitoring in a patient undergoing cancer therapy the expression of a gene corresponding to a polynucleotide having a sequence of one or SEQ ID NO: 1 – 3049 wherein a decrease in said expression prior to completion of said cancer therapy is indicative of a likelihood of success of said cancer

therapy, preferably wherein the gene comprises a sequence of SEQ ID NO: 1-3049 and wherein the cancer therapy is chemotherapy.

The present invention still further relates to a method for determining the progress of a treatment for cancer in a patient afflicted therewith, following commencement of a cancer treatment on said patient, comprising:

(a) determining in said patient a change in expression of one or more genes corresponding to a polynucleotide comprising a nucleotide sequence of SEQ ID NO: 1 – 3049; and

(b) determining a change in expression of said gene compared to expression of said one or more determined genes prior to commencement of said cancer treatment;

wherein said change in expression indicates progress of said treatment thereby determining the progress of said treatment. Preferred embodiments include where the change in expression is a decrease in expression and said decrease indicates success of said treatment.

DEFINITIONS

As used herein, the following terms have the indicated definition unless expressly stated otherwise.

The term "amplicon" refers to regions of interest, i.e., genomic segments of DNA within human chromosomes in diseased states like cancer that are demarcated and limited within specific chromosomal bands. Since these amplicons contain sequences of a gene/ or genes that are amplified (copy number gains), and/ or differentially expressed in the tissue/ cells of origin, a listing of these genes within the amplicons detected are listed in Table 3. Genes identified as being amplified and/or over-expressed within the amplicons provide a useful target for intervention with small/large

molecule/protein/antibody therapeutics, anti-sense or other therapeutic modalities. A gene or genes within these regions is also useful for diagnostic or prognostic molecular pathology characterization/companion diagnostics, and useful as pharmacodynamic biomarkers for drug response profiling and patient sub-set selection and stratification.

The term “percent identity” or “percent identical,” when referring to a sequence, means that a sequence is compared to a claimed or described sequence after alignment of the sequence to be compared (the “Compared Sequence”) with the described or claimed sequence (the “Reference Sequence”). The Percent Identity is then determined according to the following formula:

$$\text{Percent Identity} = 100\,[1-(C/R)]$$

wherein C is the number of differences between the Reference Sequence and the Compared Sequence over the length of alignment between the Reference Sequence and the Compared Sequence wherein (i) each base or amino acid in the Reference Sequence that does not have a corresponding aligned base or amino acid in the Compared Sequence and (ii) each gap in the Reference Sequence and (iii) each aligned base or amino acid in the Reference Sequence that is different from an aligned base or amino acid in the Compared Sequence, constitutes a difference; and R is the number of bases or amino acids in the Reference Sequence over the length of the alignment with the Compared Sequence with any gap created in the Reference Sequence also being counted as a base or amino acid.

If an alignment exists between the Compared Sequence and the Reference Sequence for which the percent identity as calculated above is about equal to or greater than a specified minimum Percent Identity then the Compared Sequence has the specified minimum percent identity to the Reference Sequence even though alignments may exist in which the

hereinabove calculated Percent Identity is less than the specified Percent Identity.

As used herein, the terms "portion," "segment," and "fragment," when used in relation to polypeptides, refer to a continuous sequence of residues, such as amino acid residues, which sequence forms a subset of a larger sequence. For example, if a polypeptide were subjected to treatment with any of the common endopeptidases, such as trypsin or chymotrypsin, the oligopeptides resulting from such treatment would represent portions, segments or fragments of the starting polypeptide. When used in relation to a polynucleotide, such terms refer to the products produced by treatment of said polynucleotides with any of the common endonucleases, or any stretch of polynucleotides that could be synthetically synthesized.

As used herein, the term "DNA segment" or "DNA sequence" refers to a DNA polymer, in the form of a separate fragment or as a component of a larger DNA construct, which has been derived from DNA, and may include both single stranded and duplex sequences. Such segments are provided in the form of an open reading frame uninterrupted by internal non-translated sequences, or introns, which are typically present in eukaryotic genes.

The term "coding region" refers to that portion of a gene which either naturally or normally codes for the expression product of that gene in its natural genomic environment, i.e., the region coding *in vivo* for the native expression product of the gene.

The term "nucleotide sequence" refers to a heteropolymer of deoxyribonucleotides. Generally, DNA segments encoding the proteins provided by this invention are assembled from cDNA fragments and short oligonucleotide linkers, or from a series of oligonucleotides, to provide a synthetic gene which is capable of being expressed in a recombinant

transcriptional unit comprising regulatory elements derived from a microbial or viral operon.

The term "expression product" means that polypeptide or protein that is the natural translation product of the gene and any nucleic acid sequence coding equivalents resulting from genetic code degeneracy and thus coding for the same amino acid(s).

The term "fragment," when referring to a coding sequence, means a portion of DNA comprising less than the complete coding region whose expression product retains essentially the same biological function or activity as the expression product of the complete coding region.

DETAILED SUMMARY OF THE INVENTION

The present invention relates to a set of genes that are amplified and/or over-expressed genes in cancer cell lines and have been localized to various chromosomal regions of interest. These genes have been identified through a combination of CGH, SKY, expression analysis and Reverse Transcriptase-Polymerase Chain Reaction (RT-PCR). Such genes are both markers and potential therapeutic targets for cancer, in particular breast; colon, lung and prostate malignancies. In addition, the amplified nature of such genes provides a means of diagnosing a cancerous condition, or predisposition to a cancerous conditions, by determining the amplification of one or more of such genes in a patient afflicted with, or predisposed toward, or otherwise at risk of developing, cancer.

In one aspect the present invention relates to a set of genes that have been localized within human chromosomal regions of interest (ROI) that have been identified by molecular cytogenetic techniques. In particular, the present

invention relates to chromosomal regions of interest, or amplicons, that are summarized in Table 1. Table 2 lists tissues where the amplicons are found, cell lines expressing them, the amplification ratios found in those tissues for cancer versus normal cells, amplicon size and the chromosomal locations of the amplicons. Table 3 lists the chromosomal locations and accession number identifications of these regions of interest and which serve to correlate amplicons with the cDNA sequences of SEQ ID NO: 1-3049.

Table 1 - List of Amplicons

AMPLICON	CHR	BPSTART	BPEND	BPLENGTH
A1	8	122000000	127500000	5500000
A2	13	96500000	100000000	3500000
A3	5	175000000	181500000	6500000
A4	13	26500000	34000000	7500000
A5	7	101000000	106000000	5000000
A6	10	73500000	82500000	9000000
A7	7	71000000	77500000	6500000
A8	1	116500000	120000000	3500000
A9	6	36000000	41000000	5000000
A10	18	70500000	76500000	6000000
A11	9	9000000	18500000	9500000

For Table 1, CHR means chromosome number, BPLENGTH represents the number of nucleotides in the amplicon. BPSTART refers to "base pair start point" and BPEND refers to "base pair end point" along the chromosome based on the July 2003 human reference sequence UCSC version hg16 (NCBI Build 34).

Table 2. Amplicon Locations

cell line	Amp #	tissue	chrom	band start	band stop	Ratio	amplicon size_MB
HCC1954	A1	Breast	8	q24.13	q24.13	14	5.3
NCI_H446	A1	scLung	8	q24.13	q24.21	8	8.3
NCI_H827	A1	scLung	8	q24.13	q24.21	6	8.3
HCC202	A1	Breast	8	q24.13	q24.21	6	8.3
NCI_H82	A1	scLung	8	q24.13	q24.13	7	5.3
NCI_H23	A1	nscLung	8	q24.13	q24.13	7	5.3
MDA_MB436	A2	Breast	13	q32.2	q32.3	6	5.3
NCI_H1963	A2	scLung	13	q32.3	q32.3	6	3.3
EFM192A	A2	Breast	13	q32.3	q34	8	18.8
MDA_MB157	A2	Breast	13	q32.3	q34	5	18.8
HCC1937	A2	Breast	13	q32.3	q32.3	4	3.3
SKBR3	A2	Breast	13	q32.3	q32.3	4	18.8
NCI_H1963	A2	nscLung	13	q32.3	q32.3	6	3.3
HCC1954	A3	Breast	5	q35.3	q35.3	4	4.3
MDA_MB436	A3	Breast	5	q35.1	q35.3	7	14
BT20	A4	Breast	5	q35.1	q35.3	4	14
KPL1	A5	Breast	5	q35.1	q35.3	4	14
HCC3153	A6	Breast	5	q35.3	q35.3	3	4.3
HT29	A4	Colon	13	q12.3	q13.2	5	9
SW403	A4	Colon	13	q21.1	q21.2	15	6
BT20	A4	Breast	13	q12.3	q13.2	4	9
CPDR9	A4	Prostate	13	q12.2	q12.3	2	7.1
SW480	A5	Colon	7	q22.2	q22.2	9	1
X71	A5	Colon	7	q22.1	q22.2	5	7.2
X72	A5	Colon	7	q22.3	q22.3	6	3.3
Lovo	A6	Colon	7	q22.1	q22.2	5	7.2
X1819_1	A7	Colon	7	q22.1	q22.2	5	7.2
EFM19	A6	Breast	10	q22.1	q22.3	6	15.3
PC3	A6	Prostate	10	q22.2	q22.3	7	8.3
MDA_MB436	A6	Breast	10	q22.1	q22.2	3	10.7
SKBR3	A6	Breast	10	q22.2	q22.3	4	8.3
SW48	A6	Colon	10	q22.1	q22.3	4	15.3
X71	A6	Colon	10	q22.2	q22.3	2	8.3
SKBR3	A7	Breast	7	q11.23	q11.23	5	4
X72	A7	Colon	7	q11.23	q11.23	7	4
X71	A7	Colon	7	q11.23	q11.23	5	4
X1819_1	A7	Colon	7	q11.23	q11.23	4	4
NCI_H69	A7	scLung	7	q11.23	q11.23	4	4
BT20	A8	Breast	1	p12.2	p13.2	10	9
CAMA-1	A8	Breast	1	p12	p12	6	6.7
KPL-1	A8	Breast	1	p11.2	p13.3	11	14.7
Colo205	A9	Colon	6	p21.2	p21.2	8	3.4
MDA_MB231	A9	Breast	6	p21.1	p21.2	7	9.8

NCI__H522	A9	nscLung	6	p21.2	p21.31	6	9.1
PANC-1	A10	Pancreas	18	q23	q23	7	5.2
NCI_H1607	A11	scLung	9	p22.2	p23	10	14.5
NCI_H446	A11	scLung	9	p22.3	p22.3	8	2.9
HCC1954	A11	Breast	9	p22.2	p23	10	14.5

In addition, SEQ ID NO: 1-3049 represents the nucleotide sequences for cDNA sequences corresponding to genes located in these regions of interest. Such regions contain genes found to be amplified and over-expressed in cancerous tissues, especially of breast, colon, lung, cervix, kidney, pancreas and prostate.

Each amplicon may contain about 75 genes, at least one of which will be amplified in a cancerous condition. Genes that show amplification and/or over-expression can be indicative of the cancerous status of a given cell.

Briefly, the procedures used to identify the genes disclosed herein may be summarized as follows:

For CGH analysis, based on detailed molecular cytogenetic characterizations, the following data sets are generated, which may include regions reported in the public domain as well as unique regions not previously known.

1. A map of chromosomal regions involved in consistent, recurrent and high level genomic gains (i.e., amplifications) for a representative cancer cell line or tumor type (e.g. colon, prostate, breast and lung) that can be recognized as a pattern/signature for a given tumor type.
2. A map of chromosomal regions containing genomic losses (i.e., deletions) in each tumor type and individual cell line to be examined.
3. Levels of intensities of gains and losses categorized for entry into a database.

4. A comparison of the patterns of gains and losses between the clinical samples (e.g. colon xenografts) and cell lines (e.g., colon) of matched Stages and Grades.
5. A comparison of the patterns of gains and losses between primary prostate tumor cell lines (e.g., CPDR lines) and metastatic prostate tumor cell lines (e.g., DU 145, PC3 and LNCaP).

In accordance with the present invention, for SKY analysis, data sets were generated according to the following steps:

1. Identification and development of a database of novel chromosomal rearrangements in epithelial cancer cell lines.
2. Identification of novel translocations involving specific chromosomes or chromosomal regions
3. Reconciliation of SKY and CGH analysis on the same cell line as a verification of the combined findings.

Combining genomic DNA analysis of gains and losses in the tumor cell lines/clinical samples with cDNA expression analysis from matched tumor types displayed ordered on the assembled Human genome sequence :

1. A pattern of gene expression on a Affymetrix chip set (U95 and U133) was used to generate differential gene expression profiles between samples sets containing normal and malignant tissues from colon, prostate, lung, breast and various cell lines.
2. A Spotfire™ visualization tool was developed that allowed the generation of a list of all the genes that are present in the Human genome sequence within the defined regions of gains/losses for each cell type/tumor type to identify genes to include in the HITS platform and for identification of cancer associated genes

3. The following algorithm was employed:

i) Match chromosomal regions of amplification/gains defined by CGH with the location of genes/ESTs on an Affymetrix chip as mapped to a Human genome template.

ii) Identify genes/ESTs over-expressed in tumor tissue compared to normal tissue in said chromosomal regions using.

iii) Compile data on cell lines of a particular tumor type and different tumor types showing clusters of genomic gains and losses at certain chromosomal regions.

iv) Pick BACs that span the chromosomal regions consistently gained and containing over-expressed genes in an effort to positionally clone novel cancer genes (oncogenes and genes in relevant pathways)

v) Validate the identified genes by

A) Picking STS markers that identify the gene sequence and quantify the relative copy number in genomic DNA and RNA across a panel of tumor cell lines.

B) Develop probes for FISH on chromosomes from tumor cell lines and primary tumor tissue micro-arrays.

4. The expression data from tumor cell lines that have undergone SKY/CGH analysis was used to pick candidate genes to validate as individual targets in functional genomic assays and in-vivo assays and for use in the transcriptional assay platform.

In accordance with the present invention, over-expression of cellular genes is conveniently monitored in model cellular systems using cell lines (such as is used in the example below), primary cells, or tissue samples maintained in growth media. For different purposes, these may be treated with compounds at one or more different concentrations to assay for modulating agents. Thus, cellular RNAs are isolated from the cells or cultures as an indicator of selected gene expression. The cellular RNAs are then divided and

subjected to analysis to determine the presence and/or quantity of specific RNA transcripts, which transcripts are then amplified for detection purposes using standard methodologies, such as reverse transcriptase polymerase chain reaction (RT-PCR). The levels of specific RNA transcripts, including their presence or absence, are determined. When used for identification of modulating agents, such as anti-neoplastic agents, a metric is derived for the type and degree of response of the treated sample compared to control samples.

In accordance with the foregoing, the amplicons identified as being amplified and/or over-expressed, which can include increased copy number thereof, in cancerous cells are localized in chromosomal regions of interest as identified in Tables 2 and 3.

The genes localized in these amplicons may be utilized to characterize, the cancerous, or non-cancerous, status of cells, or tissues. The methods of the invention may be used with a variety of cell lines or with primary samples from tumors maintained *in vitro* under suitable culture conditions for varying periods of time, or *in situ* in suitable animal models.

The amplicons disclosed herein are expressed at levels in cancer cells that are different from the expression levels in non-cancer cells. Expression in cancer versus non-cancer cells of the same tissue type is a key identifier.

In accordance with the forgoing, the present invention also relates to a method for identifying a gene modulating agent, such as an anti-neoplastic agent, comprising:

(a) contacting a test compound, a compound whose gene-modulating and/or anti-neoplastic activity is to be determined, with one or more cells expressing one or more genes mapped to the chromosomal region of interest, or amplicon, for genes as identified in Table 3, and

(b) determining a change in expression of said one or more genes compared to when said contacting has not occurred,

wherein a change in expression of said gene is indicative of gene modulating activity, thereby identifying said test compound as a gene modulating agent.

In accordance with the foregoing, the present invention relates to a method for identifying an antineoplastic agent, comprising:

(a) contacting a test compound with a cell that expresses one or more amplicons of Table 2 having an amplification ratio of at least 2.0; and

(b) determining a change in said amplification ratio due to said contacting;

wherein a change in said amplification ratio due to said contacting indicates that said test compound has gene modulating activity

thereby identifying said test compound as a gene modulating agent.

The present invention also contemplates a method for identifying an antineoplastic agent, comprising:

(a) contacting a test compound with a cell that expresses at least one gene corresponding to a polynucleotide comprising a nucleotide sequence of SEQ ID NO: 1 - 3049 and under conditions promoting expression of said gene; and

(b) determining a change in expression of said gene as a result of said contacting

wherein a change in expression indicates gene modulation thereby identifying said test compound as a gene modulating agent.

In preferred embodiments of these methods, the change in expression is a decrease in expression and/or the decrease in expression is a decrease in copy number of the gene and/or the gene comprises a nucleotide sequence of one of SEQ ID NO: 1 – 3049 and/or the cell was genetically engineered to express said gene.

Because the genes disclosed herein are over-expressed and relate to the cancerous condition of a cell, successful anti-neoplastic activity will commonly be exhibited by agents that reduce the expression of said genes In one embodiment thereof, the change in expression is a decrease in copy number of the gene or genes under study. In accordance therewith, said change in gene copy number is conveniently determined by detecting a change in expression of messenger RNA encoded by said gene sequence. In another preferred embodiment, expression is determined for more than one such gene, such as 2, 5, 10 or more of the genes.

Thus, the present invention also encompasses a method for detecting the cancerous status of a cell, comprising detecting elevated expression in said cell of at least one gene corresponding to a polynucleotide comprising a nucleotide sequence of SEQ ID NO: 1 – 3049 whereby such elevated expression is indicative of cancerous status of the cell. In preferred embodiments thereof, the elevated expression is an elevated copy number of the gene.

Other methods useful in measuring a change in expression of the genes disclosed herein include measuring a change in the amount or rate of synthesis of a polypeptide encoded by said gene, preferably a decrease in synthesis of said polypeptide. Most preferably, the polypeptide comprises an amino acid sequence highly homologous to a sequence encoded by a gene mapping to an amplicon disclosed herein and whose expression is elevated in cancer.

The methods of the invention can thus be utilized to identify anti-neoplastic agents useful in treatment of cancerous conditions. Such activity can be further modified by first identifying such an agent using an assay as already described and further contacting such agent with a cancerous cell, followed by monitoring of the status of said cell, or cells. A change in status

indicative of successful anti-neoplastic activity may include a decrease in the rate of replication of the cancerous cell(s), a decrease in the total number of progeny cells that can be produced by said cancerous cell(s), or a decrease in the number of times said cancerous cell(s) can replicate, or the death of said cancerous cell(s).

Anti-neoplastic agents may also be identified using recombinant cells suitably engineered to contain and express the cancer-related genes disclosed herein. In one such embodiment, a recombinant cell is formed using standard technology and then utilized in the assays disclosed herein. Methods of forming such recombinant cells are well known in the literature. See, for example, Sambrook, et al., Molecular Cloning: A Laboratory Manual, Second Edition, Cold Spring Harbor, N.Y., (1989), Wu et al, *Methods in Gene Biotechnology* (CRC Press, New York, NY, 1997), and *Recombinant Gene Expression Protocols*, in *Methods in Molecular Biology*, Vol. 62, (Tuan, ed., Humana Press, Totowa, NJ, 1997), the disclosures of which are hereby incorporated by reference.

The present invention also relates to a method for detecting the cancerous status of a cell, comprising detecting elevated copy number and/or expression in said cell of at least one gene that maps to a chromosomal region of interest, or amplicon, as identified in Table 3. Such elevated expression may be readily monitored by comparison to that of otherwise normal cells having the same genes. Elevated expression of such genes is indicative of the cancerous state. Such elevated expression, including increased copy number, may be the expression of more than one such gene.

The present invention also relates to a method for detecting a cancer-linked gene comprising the steps of contacting a test compound, identified as having gene modulating activity for a gene mapping to one of the amplicons disclosed herein, with a cell expressing a test gene and detecting modulation, such as decreased activity, of such test gene relative to when said compound

is not present thereby identifying said test gene as a cancer-related gene. In preferred embodiments, the gene determined by said method is an oncogene, or cancer facilitating gene.

In another embodiment, there is provided a method for treating cancer comprising contacting a cancerous cell with an agent first identified as having gene modulating activity using any of the assay methods disclosed according to the invention and in an amount effective to reduce the cancerous activity of said cell. In a preferred embodiment, the cancerous cell is contacted *in vivo.* In other preferred embodiments, said reduction in cancerous activity is a decrease in the rate of proliferation of said cancerous cell, or said reduction in cancerous activity is the death of said cancerous cell.

The present invention further relates to a method for treating cancer comprising contacting a cancerous cell with an agent having activity against an expression product encoded by a gene mapping to an amplicon as disclosed herein, preferably where the expression product is a polypeptide. In a preferred embodiment, said cancerous cell is contacted *in vivo.* In another preferred embodiment, the agent is an antibody.

Nucleotide sequences mapping to the amplicons disclosed herein may be genomic in nature and thus represent the sequence of an actual gene, such as a human gene, or may be a cDNA sequence derived from a messenger RNA (mRNA) and thus represent contiguous exonic sequences derived from a corresponding genomic sequence or they may be wholly synthetic in origin for purposes of testing. Such cDNA sequences, mapping to the amplicons disclosed herein are identified as SEQ ID NO: 1-3049.

As described in the Example below, the expression of cancer-related genes may be determined from the relative expression levels of the RNA complement of a cancerous cell relative to a normal (i.e., non-cancerous) cell. Because of the processing that may take place in transforming the initial RNA

transcript into the final mRNA, the sequences disclosed herein may represent less than the full genomic sequence. They may also represent sequences derived from ribosomal and transfer RNAs. Consequently, the genes present in the cell (and representing the genomic sequences) and the sequences disclosed in SEQ ID NO: 1-3049, which are mostly cDNA sequences, may be identical or may be such that the cDNAs contain less than the full genomic sequence. Such genes and cDNA sequences are still considered corresponding sequences because they both encode similar RNA sequences. Thus, by way of non-limiting example only, a gene that encodes an RNA transcript, which is then processed into a shorter mRNA, is deemed to encode both such RNAs and therefore encodes an RNA complementary to (using the usual Watson-Crick complementarity rules), or that would otherwise be encoded by, a cDNA (for example, a sequence as disclosed herein). Thus, the sequences disclosed herein correspond to genes contained in the cancerous or normal cells used to determine relative levels of expression because they represent the same sequences or are complementary to RNAs encoded by these genes. Such genes also include different alleles and splice variants that may occur in the cells used in the methods of the invention.

In addition, sequences encoding the same proteins as any of these genes, regardless of the percent identity of such sequences, are also specifically contemplated by any of the methods of the present invention that rely on any or all of said sequences, regardless of how they are otherwise described or limited. Thus, any such sequences are available for use in carrying out any of the methods disclosed according to the invention. Such sequences also include any open reading frames, as defined herein, present within any genes mapping to the amplicons of the invention.

The present invention also finds use as a means of diagnosing the presence of cancer in a patient, as where a sample of cancerous tissue or cells, or tissues or cells suspected of being cancerous, are examined for elevated expression, such as at least 2 fold expression, of a gene in one of

the amplicons disclosed herein, such as an increased expression of a cDNA sequence, or polypeptide encoded by said cDNA sequence, disclosed in Table 3 and being one of the sequences of SEQ ID NO: 1 – 3049.

For such purposes, and in accordance with the disclosure elsewhere herein, such diagnosis is based on the detection of elevated expression or amplification, such as elevated copy number, of one or more of the genes identified according to the invention. Such elevated expression can be determined by any of the means described herein.

In one such embodiment, the elevated expression, as compared to normal cells and/or tissues of the same organ, is determined by measuring the relative rates of transcription of RNA, such as by production of corresponding cDNAs and then analyzing the resulting DNA using probes developed from genes mapping to the amplicons of the invention. Thus, the levels of cDNA produced by use of reverse transcriptase with the full RNA complement of a cell suspected of being cancerous produces a corresponding amount of cDNA that can then be amplified using polymerase chain reaction, or some other means, such as rolling circle amplification, to determine the relative levels of resulting cDNA and, thereby, the relative levels of gene expression.

For RNA analysis, the latter may be isolated from samples in a variety of ways, including lysis and denaturation with a phenolic solution containing a chaotropic agent (e.g., triazol) followed by isopropanol precipitation, ethanol wash, and resuspension in aqueous solution; or lysis and denaturation followed by isolation on solid support, such as a Qiagen resin and reconstitution in aqueous solution; or lysis and denaturation in non-phenolic, aqueous solutions followed by enzymatic conversion of RNA to DNA template copies. Steady state RNA levels for a given type of cell or tissue may have to be ascertained prior to employment of the methods of the invention but such

is well within the skill of those in the art and will not be further described in detail herein.

Alternatively, increased expression, such as increased copy number, may be determined for the genes present in a cancerous cell, or a cell suspected of being cancerous, by determining elevated expression within the regions of interest, or amplicons, disclosed herein. Thus, the DNA of such cells may be extracted and probed for increased gene expression within the area disclosed herein as amplified in different cancer types and tissues.

In employing the methods of the invention, it should be borne in mind that gene expression indicative of a cancerous state need not be characteristic of every cell found to be cancerous. Thus, the methods disclosed herein are useful for detecting the presence of a cancerous condition within a tissue where less than all cells exhibit the complete pattern of over-expression. For example, a set of selected genes, which are found within the regions of interest disclosed herein, may be found, using appropriate probes, either DNA or RNA, to be present in as little as 60% of cells derived from a sample of tumorous, or malignant, tissue while being absent from as much as 60% of cells derived from corresponding non-cancerous, or otherwise normal, tissue (and thus being present in as much as 40% of such normal tissue cells). In a preferred embodiment, such gene pattern is found to be present in at least 70% of cells drawn from a cancerous tissue and absent from at least 70% of a corresponding normal, non-cancerous, tissue sample. In an especially preferred embodiment, such gene pattern is found to be present in at least 80% of cells drawn from a cancerous tissue and absent from at least 80% of a corresponding normal, non-cancerous, tissue sample. In a most preferred embodiment, such gene pattern is found to be present in at least 90% of cells drawn from a cancerous tissue and absent from at least 90% of a corresponding normal, non-cancerous, tissue sample. In an additional embodiment, such gene pattern is found to be present in at least 100% of cells drawn from a cancerous tissue

and absent from at least 100% of a corresponding normal, non-cancerous, tissue sample, although the latter embodiment may represent a rare occurrence.

Because changes in expression of these genes (up-regulation) are linked to the disease state (i.e. cancer), the change in expression may contribute to the initiation or progression of the disease. For example, if a gene that is up-regulated is an oncogene such a gene provides for a means of screening for small molecule therapeutics beyond screens based upon expression output alone. For example, genes that display up-regulation in cancer and whose elevated expression contributes to initiation or progression of disease represent targets in screens for small molecules that inhibit or block their function. Examples include, but are not be limited to, kinase inhibition, cellular proliferation, substrate analogs that block the active site of protein targets, etc.

It should be noted that there are a variety of different contexts in which genes have been evaluated as being involved in the cancerous process. Thus, some genes may be oncogenes and encode proteins that are directly involved in the cancerous process and thereby promote the occurrence of cancer in an animal. Other genes may simply be involved either directly or indirectly in the cancerous process or condition and may serve in an ancillary capacity with respect to the cancerous state. All such types of genes are deemed with those to be determined in accordance with the invention as disclosed herein. Thus, the gene determined by said method of the invention may be an oncogene, or the gene determined by said method may be a cancer facilitating gene, the latter including a gene that directly or indirectly affects the cancerous process, either in the promotion of a cancerous condition or in facilitating the progress of cancerous growth or otherwise modulating the growth of cancer cells, either *in vivo* or *ex vivo*. Such genes may work indirectly where their expression alters the activity of some other gene or gene expression product that is itself directly involved in initiating or

facilitating the progress of a cancerous condition. For example, a gene that encodes a polypeptide, either wild or mutant in type, which polypeptide acts to suppress of tumor suppressor gene, or its expression product, will thereby act indirectly to promote tumor growth.

Many cancerous genes appear to have their effect by encoding an aberrant protein that functions in a cell in a manner different from that of normal cells, or else said protein is overproduced or underproduced as a result of some mutation in the coding sequence, or promoter or enhancer sequences, of a particular gene, such as one of Genes 1 – 3049 disclosed herein and expressed by the amplicons of the invention.

In accordance with the present invention, there are provided methods for measuring the activity, such as a biological activity, of such a polypeptide. Such biological activity may include any measurable activity, such as chemical reactivity, catalytic ability, binding to specific structures and receptors, acting as a receptor, or just being present in a membrane of a cell and therefore available as a target site for antibodies or other agents. Any such polypeptides may thus provide a target for a chemotherapeutic agent, especially an antineoplastic agent.

As is well known in the art, polypeptide activities can be measured in different ways so as to enable screening procedures for agents, such as test compounds, that inhibit the activity of the polypeptide and thereby work against the function of that polypeptide, such as where the polypeptide is some type of cancer-related protein, such as that produced by expression of an oncogene, or where the polypeptide is overproduced as part of the cancer initiating or facilitating process. As non-limiting examples, such screening methods for antineoplastic agents can include the measurement of compounds that bind to proteins (or that bind to a gene or a transcript of a gene), compounds that inhibit expression (including processing and/or maturation) of a protein, or the detection of downstream reaction product,

most often with specific antibodies using enzyme-linked immunosorbent assay (ELISA) procedures well known in the art, or compounds that inhibit activity, such as enzyme activity or some other function, or compounds that interact with upstream or downstream proteins (such as with transcription factors or other binding proteins that may serve to regulate gene expression).

In accordance with the foregoing, the present invention relates to a method for identifying a compound as an anti-neoplastic agent, comprising:

(a) contacting a test compound with a polypeptide encoded by a gene selected from SEQ ID NO: 1 – 3049,

(b) determining a change in a biological activity of said polypeptide due to said contacting,

wherein a change in activity indicates anti-neoplastic activity and thereby identifies such test compound as an agent having antineoplastic activity.

In a preferred embodiment, the change in biological activity is a decrease in biological activity.

In another preferred embodiment, the biological activity is an enzyme activity, such as where the enzyme is one selected from the group kinase, protease, peptidase, phosphodiesterase, phosphatase, dehydrogenase, reductase, carboxylase. transferase, deacetylase and polymerase.

Assays for these enzymes are available, such as for phosphodiesterases (the most pharmacologically relevant phosphodiesterases are those that hydrolyze cyclic nucleotides (see, for example, cAMP and cGMP assays available from Perkin-Elmer, as well as Estrade et al., Eur. J. Pharmacol. 352:2-3, 157-163 (1998)).

Protein phosphatases remove phosphate residues from proteins. Most tests of their activity use the same assays as for protein kinases. A non-radioactive phosphatase assay system is available from Promega Biotech.

The therapeutically most relevant dehydrogenases oxidize or reduce small molecular weight metabolites, esp. steroid hormones, or that generally use or generate NAD or NADP (see: Haeseleer et al., J. Biol. Chem., 273:21790-21799 (1998)). A commercial assay is available from Cayman Chemical (at www.caymanchem.com).

Gamma-carboxylases are important enzymes in the blood coagulation process. The main assay protocols use synthetic peptides (see: Ulrich et al., J. Biol. Chem., 263:9697-9702 (1988); Begley et al., J. Biol. Chem., 275:36245-36249 (2000)).

In highly preferred embodiments, the kinase is one of a protein kinase, a serine or threonine kinase, or a receptor tyrosine protein kinase. Where the polypeptide encoded by a gene of the invention is a protein kinase, especially involving tyrosine kinase, various assays for activity are available. Protein kinases add phosphate groups to serine, threonine or tyrosine residues on proteins, most commonly measured with phospho-serine, threonine, or tyrosine-specific antibodies, or generation of radiolabeled substrate, or consumption of ATP, or phosphorylation of (synthetic) small peptides, or measuring downstream enzyme activity and gene transcription. Such assays are commercially available. (See, for example, the tyrosine kinase assay from Roche Molecular Biochemicals). Assays for serine/threonine kinases are also available at Chromagen.com, Upstate Biotechnology, Inc. (Lake Placid, NY, and at upstatebiotech.com) and from Applied BioSystems (Foster City, CA (home.appliedbiosystems.com)).

In other specific embodiments, the protease is a serine protease, cysteine protease or aspartic acid protease, or the transferase is a methyltransferase, preferably a cytosine methyltransferase or an adenine methyltransferase, or the deacetylase is a histone deacetylase, or the

carboxylase is a γ-carboxylase, or the peptidase is a zinc peptidase, or the polymerase is a DNA polymerase or an RNA polymerase.

Proteases degrade proteins, un-specifically or at specific sites. Almost all pharmacologically relevant ones have very narrowly defined specific substrates, and their activity is most often measured by directly measuring cleavage product or generation of (fluorescent) light after cleavage of synthetic substrates. Assays are available for serine proteases (Calbiochem, Palo Alto, CA, and see Berdichevsky et al., J. Virol. Methods, 107:245-255 (2003), for systeine proteases (See: Schulz et al., Mol. Pathol., 51:222-24 (1998) and Selzer et al., PNAS, 96:11015-11022 (1999)), for aspartic acid proteases (Geno Tech, Inc. at www.genotech.com) and for zinc peptidases (see Evans et al., J. Biol. Chem., 278:23180-23186 (2003)).

Both (regulatory) DNA-methylases and (biosynthetic) protein methylases that are drug targets. (See: Jonassen and Clarke, J. Biol. Chem., 275:12381-12387 (2000); Jackson et al., Nature, 416:556-560 (2002)).

Most HDAC (histone deacetylase) assays use colorimetric or fluorometric (synthetic) substrates. Standard assays are for binding, especially molecular size changes, blocking a specific site, and effects on transcription or downstream reactions (if DNA or RNA is the direct target of a drug). A commercial assay is available from Vinci Biochem (at www.vincibiochem.it).

In another specific embodiment, the biological activity is a membrane transport activity, preferably wherein the polypeptide is a cation channel protein, an anion channel protein, a gated-ion channel protein or an ABC transporter protein. Drug effects on the activity of transporter and channel proteins are screened by measuring increase or decrease of the ((radio-)labeled) transported entity inside or outside the cell, in cell-based assays, ATP consumption (in the case of ATPases), or changes in cell membrane

potential. Assays employing such proteins are available, such as for ABC transporter (see: Marcil et al., Lancet, 354:1341-46 (1999) and for ion channels (from Evotec OAI, at www.evotecoai.com and from PharmaLinks, at www.pharmalinks.org/research/cellsignalling).

In one embodiment, the polypeptide is an integrin (the signal transduction pathways elicited by the integrins are slow and not very well characterized, hence most assays are either just binding assays or measure downstream biological phenomena (such as migration, invasion, etc.) (See: Ganta et al., Endocrinology, 138:3606-3612 (1997); Sim et al., J. Biomed. Mater. Research, 68A:352-359 (2004); and Weinreb et al., Anal. Biochem., 306:305-313 (2002)), or a Cytochrome P450 enzyme (almost all cytochrome assays require knowledge of what the substrate is and measure conversion of substrate (free or (radio-)labeled) or generation of product; useful C^{14}-labeled substrates are available from Amersham Biosciences at www1.amershambiosciences.com), or a nuclear hormone receptor (Assays available from Discoverx, Fremont, CA, such as an estrogen assay; also see Rosen et al., Curr. Opin. Drug. Discov. Devel., 6:224-30 (2003)).

In one preferred embodiment, the biological activity is a receptor activity, preferably where the receptor is a G-protein-coupled receptor (GPCR).

GPCRs are transmembrane proteins that wind 7 times back and forth through a cell's plasma membrane with a ligand binding site located on the outside of the membrane surface of the cell and the effector site being present inside the cell. These receptors bind GDP and GTP. In response to ligand binding, GPCRs activate signal transduction pathways which induce a number of assayable physiological changes, e.g., an increase in intracellular calcium levels, cyclic-AMP, inositol phosphate turnover, and downstream gene transcription (directly or via reporter-assays) along with other translocation assays available for measuring GPCR activation when the polypeptide

encoded by a gene of the invention is a GPCR. Thus, such proteins work through a second messenger. The result is activation of CREB, a transcription factor that stimulates the production of gene products. One useful assay is the so-called BRET2/arrestin assay, useful in screening for compounds that interact with GPCRs. (See: Bertrand et al, J. Recept. Signal Transduct Res., 22:533-41 (Feb.-Nov. 2002)). In addition, numerous assays are commercially available, such as the Transfluor Assay, available from Norak Biosciences, Inc. (www.norakbio.com) or ArrayScan and KineticScan, both from Cellomics, or assays from CyBio (Jena, Germany).

Assays useful with the invention are usually set up to screen for agonists or antagonists after adding ligand, but effects on most of these parameters can be measured whether or not the ligand for the receptor is known. Such assays may involve radioligand-binding assays. Activation of the majority of GPCRs by agonists leads to the interaction of beta-arrestin (a protein that is involved in receptor desensitization and sequestration) with the receptor, which is measurable by fluorescence energy transfer

The disclosure of all journal articles, or other publications, referred to herein are hereby incorporated by reference in their entirety.

In one embodiment, the polypeptide is in a solution or suspension and contact with the test compound is by direct contact between the test compound and the protein molecule. Alternatively, the polypeptide may be in a cell and the test compound may have to diffuse into the cell in order to contact the polypeptide. In an alternative embodiment, the test compound may be contacted with a cell that contains or expresses the polypeptide but the test compound may have no direct contact with the polypeptide. In stead, the test compound may act to induce production and/or activity of a different compound, such as an intracellular second messenger that serves to contact the polypeptide and modulate or change the biological activity of this polypeptide.

In accordance with the foregoing, the method of the present invention includes cancer modulating agents that are themselves either polypeptides, or small chemical entities, that affect the cancerous process, including initiation, suppression or facilitation of tumor growth, either *in vivo* or *ex vivo.* Such agents may also be antibodies that react with one or more polypeptides encoded by genes present in the amplicons of the invention.

In keeping with the disclosure herein, the present invention also relates to a method for treating cancer comprising contacting a cancerous cell with an agent having activity against an expression product encoded by a gene mapping within regions of chromosomal interest.

The method of the present invention includes embodiments of the above-recited method wherein said cancer cell is contacted *in vivo* as well as *ex vivo*, preferably wherein said agent comprises a portion, or is part of an overall molecular structure, having affinity for said expression product. In one such embodiment, said portion having affinity for said expression product is an antibody.

In one embodiment of the present invention, a chemical agent, such as a protein or other polypeptide, is joined to an agent, such as an antibody, having affinity for an expression product of a cancerous cell, such as a polypeptide or protein encoded by a gene related to the cancerous process, especially a gene mapping to an amplicon as disclosed herein In a specific embodiment, said expression product acts as a therapeutic target for the affinity portion of said anticancer agent and where, after binding of the affinity portion of such agent to the expression product, the anti-cancer portion of said agent acts against said expression product so as to neutralize its effects in initiating, facilitating or promoting tumor formation and/or growth. In a separate embodiment of the present invention, binding of the agent to said expression product may, without more, have the effect of deterring cancer

promotion, facilitation or growth, especially where the presence of said expression product is related, either intimately or only in an ancillary manner, to the development and growth of a tumor. Thus, where the presence of said expression product is essential to tumor initiation and/or growth, binding of said agent to said expression product will have the effect of negating said tumor promoting activity. In one such embodiment, said agent is an apoptosis-inducing agent that induces cell suicide, thereby killing the cancer cell and halting tumor growth.

Many cancers contain chromosomal rearrangements, which typically represent translocations, amplifications, or deletions of specific regions of genomic DNA. A recurrent chromosomal rearrangement that is associated with a specific stage and type of cancer always affects a gene (or possibly genes) that play a direct and critical role in the initiation or progression of the disease. Many of the known oncogenes or tumor suppressor genes that play direct roles in cancer have either been initially identified based upon their positional cloning from a recurrent chromosomal rearrangement or have been demonstrated to fall within a rearrangement subsequent to their cloning by other methods. In all cases, such genes display amplification at both the level of DNA copy number and at the level of transcriptional expression at the mRNA level.

In accordance with the present invention, said functionally related genes are genes modulating the same metabolic pathway or said genes are genes encoding functionally related polypeptides. In one such embodiment, said genes are genes whose expression is modulated by the same transcriptional activator or enhancer sequence, especially where said transcriptional activator or enhancer increases, or otherwise modulates, the activity of a gene mapping to one of the amplicons of the invention.

The present invention also relates to a process that comprises a method for producing a product, such as test data, comprising identifying an

agent according to one of the disclosed methods for identifying such an agent (i.e., the therapeutic agents identified according to the assay procedures disclosed herein) wherein said product is the data collected with respect to said agent as a result of said identification process, or assay, and wherein said data is sufficient to convey the chemical character and/or structure and/or properties of said agent. For example, the present invention specifically contemplates a situation whereby a user of an assay of the invention may use the assay to screen for compounds having the desired enzyme modulating activity and, having identified the compound, then conveys that information (i.e., information as to structure, dosage, etc) to another user who then utilizes the information to reproduce the agent and administer it for therapeutic or research purposes according to the invention. For example, the user of the assay (user 1) may screen a number of test compounds without knowing the structure or identity of the compounds (such as where a number of code numbers are used the first user is simply given samples labeled with said code numbers) and, after performing the screening process, using one or more assay processes of the present invention, then imparts to a second user (user 2), verbally or in writing or some equivalent fashion, sufficient information to identify the compounds having a particular modulating activity (for example, the code number with the corresponding results). This transmission of information from user 1 to user 2 is specifically contemplated by the present invention.

In accordance with the foregoing, the present invention relates to a method for producing test data with respect to the anti-neoplastic activity of a compound, such as a test compound as defined herein, comprising:

(a) identifying a test compound as having anti-neoplastic activity using a method of the invention, such as measuring the biological activity of a polypeptide encoded by a gene of Table 3 (SEQ ID NO: 1-3049), and

(b) producing test data with respect to the anti-neoplastic activity of said test compound sufficient to identify the chemical structure of said test compound.

In another embodiment, the present invention provides a method for monitoring the progress of a cancer treatment, such as where the methods of the invention permit a determination that a given course of cancer therapy is or is not proving effective because of an increased or decreased expression of a gene, or genes, mapping to an amplicon as disclosed herein. For example, where there is an increased copy number of one or more of said genes monitoring of such genes can predict success or failure of a course of therapy, such as chemotherapy, or predict the likelihood of a relapse based on elevated activity or expression of one or more of these genes following such course of therapy.

In accordance with the foregoing, the present invention contemplates a method for determining the progress of a treatment for cancer in a patient afflicted with cancer, following commencement of a cancer treatment on said patient, comprising determining in said patient a change in expression of one or more genes, preferably more than one, corresponding to a gene of Table 3 or encoding a polypeptide or transcript of such a gene, or genes compared to expression of said one or more determined genes prior to commencement of said cancer treatment, wherein a change in expression, especially a decrease in expression, indicates positive effects of such treatment, thereby determining the progress of said treatment.

In a preferred embodiment, the detected change in expression is a decrease in expression. In another preferred embodiment, the cancer treatment is treatment with a chemotherapeutic agent, especially an agent that modulates, preferably decreases, expression of a gene identified herein, such as where said agent was first identified as having anti-neoplastic activity using a method of the invention. Thus, in accordance with this aspect of the present invention, a patient, or even a research animal, such as a mouse, rat, rabbit or primate, afflicted with cancer, including a cancer induced for research purposes, is introduced to a cancer treatment regimen, such as

administration of an anti-cancer agent, including one first identified as having anti-neoplastic activity by one or more of the screening methods disclosed herein. The progress and success or failure of such treatment is subsequently ascertained by determining the subsequent expression of one or more, preferably at least 3, or 5, or 10, of genes mapping to one or more of the amplicons disclosed herein, preferably to the same amplicon, or that encodes a transcript or polypeptide of such a gene following said treatment. In a preferred embodiment, a treatment that reduces said expression is deemed advantageous and may then be the basis for continuing said treatment. The methods of the invention thereby provide a means of continually monitoring the success of the treatment and evaluating both the need, and desirability, of continuing said treatment. In addition, more than one said treatment may be administered simultaneously without diminishing the value of the methods of the invention in determining the overall success of such combined treatment. Thus, more than one said anti-neoplastic agent may be administered to the same patient and overall effectiveness ascertained by the recited methods.

In accordance with the foregoing, the present invention also contemplates a method for determining the likelihood of survival of a patient afflicted with cancer, following commencement of a cancer treatment on said patient, comprising determining in said patient a change in expression of one or more genes, preferably more than one, corresponding to a gene of Table 3 or encoding a polypeptide or transcript of such a gene, or genes, compared to expression of said one or more determined genes prior to commencement of said cancer treatment, wherein a change in expression, especially a decrease in expression, indicates positive and life-extending effects of such treatment, thereby determining the likelihood of survival of said treatment.

In a preferred embodiment, the detected change in expression is a decrease in expression and said determined gene, or genes, may include 2, 3, 5, 10 or more of the genes described herein. Thus, the methods of the invention may be utilized as a means for compiling cancer survival statistics

following one or more, possibly combined, treatments for cancer as in keeping with the other methods disclosed herein.

The genes of the amplicons, or regions of interest, identified herein also offer themselves as pharmacodynamic markers (or as pharmacogenetic and/or surrogate markers), such as for patient profiling prior to clinical trials and/or targeted therapies, including combination treatments, resulting from the identification of these genes as valid gene targets for chemotherapy based on the screening procedures of the invention. In one embodiment thereof, the likelihood of success of a cancer treatment with a selected chemotherapeutic agent may be based on the fact that such agent has been determined to have expression modulating activity with one or more genes identified herein, especially where said genes have been identified as showing elevated expression levels in samples from a prospective patient afflicted with cancer. Methods described elsewhere herein for determining cancerous status of a cell may find ready use in such evaluations.

It should be cautioned that, in carrying out the procedures of the present invention as disclosed herein, any reference to particular buffers, media, reagents, cells, culture conditions and the like are not intended to be limiting, but are to be read so as to include all related materials that one of ordinary skill in the art would recognize as being of interest or value in the particular context in which that discussion is presented. For example, it is often possible to substitute one buffer system or culture medium for another and still achieve similar, if not identical, results. Those of skill in the art will have sufficient knowledge of such systems and methodologies so as to be able, without undue experimentation, to make such substitutions as will optimally serve their purposes in using the methods and procedures disclosed herein.

The present invention will now be further described by way of the following non-limiting example. In applying the disclosure of the example, it

should be kept clearly in mind that other and different embodiments of the methods disclosed according to the present invention will no doubt suggest themselves to those of skill in the relevant art.

EXAMPLE

Cancerous cells that over-express one or more genes mapping to the amplicons disclosed herein, are grown to a density of 10^5 cells/cm^2 in Leibovitz's L-15 medium supplemented with 2 mM L-glutamine (90%) and 10% fetal bovine serum. The cells are collected after treatment with 0.25% trypsin, 0.02% EDTA at 37°C for 2 to 5 minutes. The trypsinized cells are then diluted with 30 ml growth medium and plated at a density of 50,000 cells per well in a 96 well plate (200 μl/well). The following day, cells are treated with either compound buffer alone, or compound buffer containing a chemical agent to be tested, for 24 hours. The media is then removed, the cells lysed and the RNA recovered using the RNAeasy reagents and protocol obtained from Qiagen. RNA is quantitated and 10 ng of sample in 1 μl are added to 24 μl of Taqman reaction mix containing 1X PCR buffer, RNAsin, reverse transcriptase, nucleoside triphosphates, amplitaq gold, tween 20, glycerol, bovine serum albumin (BSA) and specific PCR primers and probes for a reference gene (18S RNA) and a test gene (Gene X). Reverse transcription is then carried out at 48°C for 30 minutes. The sample is then applied to a Perlin Elmer 7700 sequence detector and heat denatured for 10 minutes at 95°C. Amplification is performed through 40 cycles using 15 seconds annealing at 60°C followed by a 60 second extension at 72°C and 30 second denaturation at 95°C. Data files are then captured and the data analyzed with the appropriate baseline windows and thresholds.

The quantitative difference between the target and reference genes is then calculated and a relative expression value determined for all of the samples used. This procedure is then repeated for each of the target genes in

a given signature, or characteristic, set and the relative expression ratios for each pair of genes is determined (i.e., a ratio of expression is determined for each target gene versus each of the other genes for which expression is measured, where each gene's absolute expression is determined relative to the reference gene for each compound, or chemical agent, to be screened). The samples are then scored and ranked according to the degree of alteration of the expression profile in the treated samples relative to the control. The overall expression of the set of genes relative to the controls, as modulated by one chemical agent relative to another, is also ascertained. Chemical agents having the most effect on a given gene, or set of genes, are considered the most anti-neoplastic.

SEQUENCE LISTING ON CD-ROM ONLY

The sequences disclosed herein as SEQ ID NO: 1-3049 in the sequence listing are contained on compact disc (CD-ROM) only (denoted as Filename: Avalon 237 (5,279 kB), 4 copies of which appear on discs denoted Copy 1, Copy 2, Copy 3 and CRF, and which discs were generated on 7 March 2005), which accompanies this application and the contents of said CD-ROMs are hereby incorporated by reference in their entirety. These sequence numbers correspond to cDNA sequences derived from the genes identified in Table 3 .

Table 3 – Amplicon Identification

Amplicon	Transcript Id	Name	Chromosome	bpstart	bpend
A1	ENST00000303924	HAS2	8	122582937	122598168
A1	ENSESTT00000046662	t	8	122585931	122609941
A1	ENSESTT00000046660		8	122608522	122610061
A1	ENSESTT00000046661		8	122640599	122653390
A1	ENST00000328524		8	123738119	123738958
A1	ENSESTT00000047108		8	123750171	123920219
A1	ENST00000314393	NM_014943	8	123750577	123943336
A1	ENSESTT00000047109		8	123789727	123790358
A1	ENSESTT00000047110		8	123921884	123943336
A1	ENSESTT00000047116		8	123983935	123988137
A1	ENSESTT00000047111		8	123983935	124011208
A1	ENSESTT00000047112		8	123983935	124011208
A1	ENST00000259512	NM_024295	8	123984034	124011088
A1	ENSESTT00000047115		8	123984041	123990329
A1	ENSESTT00000047114		8	123987689	123999547
A1	ENSESTT00000047113		8	123991511	124011208
A1	ENSESTT00000065616		8	124041564	124062478
A1	ENST00000287380	NM_145647	8	124041598	124120767
A1	ENSESTT00000065617		8	124042077	124066211
A1	ENST00000309336	Q8TAK7	8	124046061	124098030
A1	ENST00000327098	Q8TAK7	8	124062489	124073028
A1	ENSESTT00000065618		8	124074181	124088995
A1	ENSESTT00000065619		8	124094878	124098018
A1	ENSESTT00000065620		8	124099026	124120981
A1	ENSESTT00000065621		8	124109587	124120981
A1	ENSESTT00000065622		8	124109691	124120981

TABLE 3 (Continued)

A1	ENST00000318462	Q86UY5	8	124147875	124177793
A1	ENSESTT00000065624		8	124151533	124162903
A1	ENSESTT00000065623		8	124151533	124177809
A1	ENST00000276699	NM_032899	8	124151685	124176255
A1	ENSESTT00000065671		8	124188795	124210200
A1	ENST00000276704	NM_032847	8	124188931	124210174
A1	ENSESTT00000065672		8	124189023	124210138
A1	ENSESTT00000065673		8	124195324	124210138
A1	ENSESTT00000065668		8	124218685	124236123
A1	ENST00000297857	ZHX1	8	124222153	124224774
A1	ENSESTT00000065670		8	124224524	124243082
A1	ENSESTT00000065669		8	124224572	124243107
A1	ENST00000309019		8	124284858	124285232
A1	ENST00000287394	NM_014109	8	124289962	124365185
A1	ENSESTT00000065666		8	124294833	124315051
A1	ENSESTT00000065667		8	124305201	124313890
A1	ENSESTT00000065665		8	124315497	124328452
A1	ENST00000329771		8	124369449	124370499
A1	NST00000287387	M_018024	8	124385553	124410848
A1	NSESTT00000065625		8	124385553	124410849
A1	ENSESTT00000065626		8	124385601	124410849
A1	ENSESTT00000065627		8	124385602	124410849
A1	ENSESTT00000065628		8	124385602	124410849
A1	ENST00000287396	FBXO32	8	124471947	124510034
A1	ENSESTT00000065664		8	124472004	124500973
A1	ENSESTT00000065662		8	124472004	124510034
A1	ENSESTT00000065663		8	124483080	124510034
A1	ENST00000325995		8	124614600	124621754
A1	ENST00000330051		8	124614651	124621727
A1	ENST00000329589		8	124614654	124621727

TABLE 3 (Continued)

A1	ENSESTT00000065661		8	124649681	124657768
A1	ENST00000262219	ANXA13	8	124650068	124681581
A1	ENSESTT00000065659		8	124662584	124706220
A1	ENSESTT00000065660		8	124667216	124706214
A1	ENST00000334705	Q8N6F3	8	124737531	124744075
A1	ENST00000325963	NM_144963	8	124747485	124784276
A1	ENSESTT00000065657		8	124749308	124767066
A1	ENSESTT00000065656		8	124753384	124767066
A1	ENSESTT00000065658		8	124777101	124779458
A1	ENST00000297628		8	124934987	124955009
A1	ENST00000321393	NM_173684	8	124982464	124984850
A1	ENSESTT00000049471		8	125004837	125009297
A1	ENST00000308614	NM_182525	8	125014902	125029621
A1	ENST00000330102		8	125045027	125088508
A1	ENST00000327482		8	125120753	125121402
A1	ENST00000297632	Q8WVK5	8	125280819	125341514
A1	ENSESTT00000049470		8	125282330	125296251
A1	ENST00000328599	NM_017956	8	125419757	125421103
A1	ENSESTT00000049469		8	125441637	125443183
A1	ENSESTT00000049445		8	125443596	125455222
A1	ENST00000303545	RNF139	8	125443702	125456727
A1	ENSESTT00000049468		8	125454689	125456214
A1	ENSESTT00000049466		8	125457337	125491832
A1	ENSESTT00000049464		8	125457337	125507878
A1	ENSESTT00000049463		8	125457337	125507907
A1	ENSESTT00000049461		8	125457337	125507908
A1	ENSESTT00000049458		8	125457337	125507913
A1	ENSESTT00000049467		8	125457339	125472731
A1	ENSESTT00000049462		8	125457339	125507908
A1	ENST00000276692	NM_032026	8	125457339	125507917

TABLE 3 (Continued)

A1	ENSESTT00000049465		8	125472748	125507878
A1	ENSESTT00000049459		8	125472748	125507913
A1	ENSESTT00000049460		8	125473099	125507913
A1	ENST00000276689	NDUFB9	8	125507932	125518808
A1	ENSESTT00000049446		8	125507947	125518807
A1	ENST00000325064	MTSS1	8	125519619	125697247
A1	ENSESTT00000049457		8	125521907	125524630
A1	ENSESTT00000049456		8	125525191	125526708
A1	ENSESTT00000049455		8	125526532	125537360
A1	ENSESTT00000049453		8	125553967	125697188
A1	ENSESTT00000049454		8	125668151	125697188
A1	ENST00000319286	NM_152412	8	125942128	125948216
A1	ENSESTT00000049452		8	125965815	125967028
A1	ENST00000265896	SQLE	8	125968234	125990776
A1	ENSESTT00000049447		8	125974452	125989666
A1	ENSESTT00000049451		8	125987460	125991054
A1	ENSESTT00000049448		8	125993091	125997546
A1	ENSESTT00000049450		8	125993091	126001545
A1	ENSESTT00000049449		8	125993091	126006166
A1	ENST00000318410	Y196_HUMAN	8	125993448	126052729
A1	ENSESTT00000052951		8	126001094	126012931
A1	ENSESTT00000052952		8	126001094	126012931
A1	ENSESTT00000052949		8	126001094	126013531
A1	ENSESTT00000052944		8	126001094	126032404
A1	ENSESTT00000052945		8	126001094	126032404
A1	ENSESTT00000052953		8	126001148	126008731
A1	ENSESTT00000052950		8	126006063	126013531
A1	ENSESTT00000052946		8	126006063	126032404
A1	ENSESTT00000052948		8	126012674	126016164
A1	ENSESTT00000052947		8	126013317	126032404

TABLE 3 (Continued)

A1	ENSESTT00000052943		8	126036476	126043900
A1	ENSESTT00000052941		8	126045186	126060614
A1	ENSESTT00000052942		8	126051717	126060573
A1	ENST00000287437	NM_173685	8	126060684	126335950
A1	ENSESTT00000052921		8	126060694	126120112
A1	ENSESTT00000052935		8	126060694	126151406
A1	ENSESTT00000052934		8	126060694	126326148
A1	ENSESTT00000052931		8	126060694	126326652
A1	ENSESTT00000052932		8	126060694	126326652
A1	ENSESTT00000052933		8	126060694	126326652
A1	ENSESTT00000052929		8	126060694	126335951
A1	ENSESTT00000052930		8	126060694	126335951
A1	ENSESTT00000052924		8	126060717	126151406
A1	ENSESTT00000052923		8	126060717	126326652
A1	ENSESTT00000052922		8	126060717	126335951
A1	ENSESTT00000052926		8	126060741	126151406
A1	ENSESTT00000052925		8	126060741	126326652
A1	ENSESTT00000052927		8	126150930	126335951
A1	ENSESTT00000052940		8	126317027	126320247
A1	ENSESTT00000052928		8	126326536	126335951
A1	ENST00000311922	NM_025195	8	126399453	126407235
A1	ENSESTT00000052936		8	126399454	126404869
A1	ENSESTT00000052939		8	126400000	126402312
A1	ENSESTT00000052937		8	126402477	126405286
A1	ENST00000311709	Q9P1E1	8	126552574	126553590
A1	ENSESTT00000052938		8	126914570	126919779
A1	ENST00000329599		8	127041420	127043050
A1	ENSESTT00000046663		8	127466983	127469137
A1	ENSESTT00000046664		8	127487532	127491189
A2	ENSESTT00000040368		13	96395910	96638676

TABLE 3 (Continued)

A2	ENSESTT00000040357		13	96493435	96594999
A2	OTTHUMT00013002849	FARP1-006	13	96493435	96595559
A2	ENSESTT00000040356		13	96493435	96762294
A2	OTTHUMT00013002844	FARP1-001	13	96493435	96800024
A2	ENST00000319562	FARP1	13	96493506	96798828
A2	ENSESTT00000040369		13	96526040	96526774
A2	OTTHUMT00013002835	bA10G5.1-002	13	96526040	96527520
A2	OTTHUMT00013002834	bA10G5.1-001	13	96526425	96527547
A2	ENST00000267291	ZNF183L1	13	96526535	96527491
A2	OTTHUMT00013002839	bA261P24.2-002	13	96678973	96683493
A2	OTTHUMT00013002838	bA261P24.2-001	13	96679135	96683493
A2	ENSESTT00000040358		13	96715645	96762294
A2	OTTHUMT00013002845	FARP1-002	13	96734616	96736041
A2	OTTHUMT00013002846	FARP1-003	13	96754326	96762232
A2	OTTHUMT00013002847	FARP1-004	13	96759593	96775753
A2	OTTHUMT00013002848	FARP1-005	13	96781485	96786357
A2	OTTHUMT00013002842	bA111L24.3-001	13	96785660	96786095
A2	ENSESTT00000040359		13	96789051	96798697
A2	OTTHUMT00013002862	STK24-005	13	96800456	96816816
A2	OTTHUMT00013002859	STK24-002	13	96800456	96872252
A2	OTTHUMT00013002858	STK24-001	13	96800456	96927118
A2	ENSESTT00000040367		13	96802878	96810698
A2	ENSESTT00000040366		13	96802878	96816333
A2	ENSESTT00000040365		13	96802878	96825181
A2	ENSESTT00000040363		13	96802878	96825239
A2	ENSESTT00000040360		13	96802878	96927359
A2	ENSESTT00000040361		13	96802878	96927359
A2	ENST00000261573	STK24	13	96803428	96872107
A2	OTTHUMT00013002863	STK24-006	13	96805676	96814040
A2	OTTHUMT00013002860	STK24-003	13	96806237	96869522

TABLE 3 (Continued)

A2	ENSESTT00000040364		13	96812027	96825239
A2	OTTHUMT00013002861	STK24-004	13	96825116	96928195
A2	OTTHUMT00013002864	STK24-007	13	96855283	96926459
A2	ENSESTT00000040362		13	96855283	96926459
A2	ENST00000313290	Q8WYY0	13	96886851	96887246
A2	OTTHUMT00013002856	bA295B17.5-001	13	96927499	96929085
A2	OTTHUMT00013002872	bA295B17.2-001	13	96960547	96961131
A2	OTTHUMT00013002874	bA295B17.3-001	13	96979939	96980244
A2	OTTHUMT00013002876	bA295B17.4-001	13	96991069	96991494
A2	OTTHUMT00013002878	SLC15A1-001	13	97034056	97102908
A2	ENST00000218552	SLC15A1	13	97034979	97076822
A2	OTTHUMT00013002879	SLC15A1-002	13	97070782	97076822
A2	ENST00000313260	O14496	13	97071712	97076756
A2	OTTHUMT00013002899	bA155N3.2-010	13	97143742	97182048
A2	OTTHUMT00013002890	bA155N3.2-001	13	97143742	97328245
A2	ENSESTT00000040495		13	97144240	97147514
A2	ENSESTT00000040494		13	97144240	97150734
A2	ENST00000301980	DOC9_HUMAN	13	97147367	97436606
A2	OTTHUMT00013002902	bA155N3.2-013	13	97150543	97179710
A2	OTTHUMT00013002901	bA155N3.2-012	13	97157916	97179621
A2	OTTHUMT00013002898	bA155N3.2-009	13	97159564	97197939
A2	ENSESTT00000040492		13	97160444	97203725
A2	ENSESTT00000040493		13	97160510	97182047
A2	OTTHUMT00013002900	bA155N3.2-011	13	97160514	97179751
A2	OTTHUMT00013002896	bA155N3.2-007	13	97181651	97206239
A2	OTTHUMT00013002895	bA155N3.2-006	13	97182029	97200335
A2	OTTHUMT00013002882	bA155N3.3-001	13	97182339	97184884
A2	OTTHUMT00013002894	bA155N3.2-005	13	97196203	97210731
A2	ENSESTT00000040491		13	97206155	97213319
A2	OTTHUMT00013002897	bA155N3.2-008	13	97210436	97213803

TABLE 3 (Continued)

A2	ENSESTT00000040490		13	97210439	97213399
A2	ENSESTT00000040489		13	97217686	97230930
A2	ENSESTT00000040488		13	97234078	97238454
A2	OTTHUMT00013002893	bA155N3.2-004	13	97238390	97238940
A2	ENSESTT00000040487		13	97253255	97271344
A2	ENSESTT00000040486		13	97253255	97276111
A2	OTTHUMT00013002891	bA155N3.2-002	13	97272306	97436880
A2	ENST00000333692		13	97300012	97300702
A2	OTTHUMT00013002884	bA318G11.2-001	13	97300012	97300702
A2	OTTHUMT00013002892	bA155N3.2-003	13	97305690	97436648
A2	ENSESTT00000040485		13	97305748	97436584
A2	OTTHUMT00013002888	bA122A8.3-001	13	97523848	97524745
A2	OTTHUMT00013002886	bA122A8.1-001	13	97540834	97541246
A2	ENST00000325317		13	97541028	97541237
A2	OTTHUMT00013002916	bA87L10.1-001	13	97546697	97550965
A2	OTTHUMT00013002917	bA87L10.1-002	13	97546697	97550965
A2	ENSESTT00000040484		13	97547656	97550936
A2	OTTHUMT00013002939	bA178C10.1-008	13	97551029	97735570
A2	OTTHUMT00013002933	bA178C10.1-002	13	97551029	97735795
A2	ENSESTT00000040442		13	97551031	97736683
A2	ENSESTT00000040438		13	97551081	97718301
A2	ENSESTT00000040437		13	97551081	97736683
A2	ENSESTT00000040439		13	97551109	97664477
A2	OTTHUMT00013002940	bA178C10.1-009	13	97551142	97690820
A2	OTTHUMT00013002942	bA178C10.1-011	13	97551147	97664475
A2	ENSESTT00000040440		13	97551164	97718142
A2	OTTHUMT00013002932	bA178C10.1-001	13	97551164	97736689
A2	OTTHUMT00013002941	bA178C10.1-010	13	97551171	97594879
A2	ENSESTT00000040441		13	97551172	97736683
A2	ENST00000257320	PHGDHL1	13	97551667	97735590

TABLE 3 (Continued)

A2	OTTHUMT00013002920	bA461N23.2-001	13	97565231	97566117
A2	ENST00000325202		13	97565627	97566013
A2	ENST00000325028	PHGDHL1	13	97588684	97735590
A2	OTTHUMT00013002934	bA178C10.1-003	13	97594770	97736689
A2	OTTHUMT00013002928	GPR18-001	13	97604987	97611999
A2	ENST00000245300	GPR18	13	97604995	97608642
A2	ENSESTT00000040482		13	97605550	97608614
A2	OTTHUMT00013002929	GPR18-002	13	97605834	97608629
A2	ENSESTT00000040483		13	97606624	97608610
A2	OTTHUMT00013002922	EBI2-001	13	97644794	97657708
A2	ENST00000301931	EBI2	13	97644799	97657654
A2	ENSESTT00000040481		13	97645785	97657708
A2	OTTHUMT00013002937	bA178C10.1-006	13	97658207	97735649
A2	OTTHUMT00013002935	bA178C10.1-004	13	97663038	97736689
A2	OTTHUMT00013002936	bA178C10.1-005	13	97664963	97735953
A2	OTTHUMT00013002924	bA461N23.5-001	13	97668409	97669210
A2	OTTHUMT00013002926	bA461N23.6-001	13	97701675	97702282
A2	OTTHUMT00013002938	bA178C10.1-007	13	97718042	97727821
A2	OTTHUMT00013002954	bA178C10.2-001	13	97722428	97722941
A2	ENSESTT00000040480		13	97736300	97736679
A2	ENSESTT00000040479		13	97756206	97759085
A2	OTTHUMT00013002956	bA178C10.3-001	13	97758036	97759317
A2	OTTHUMT00013002960	bA214F16.3-001	13	97841538	97842752
A2	OTTHUMT00013002958	bA214F16.2-001	13	97849982	97851307
A2	ENSESTT00000040461		13	97851670	97897704
A2	ENSESTT00000040460		13	97851670	97905912
A2	ENSESTT00000040457		13	97851670	97913646
A2	ENSESTT00000040458		13	97851670	97913646
A2	ENSESTT00000040459		13	97851670	97913646
A2	ENSESTT00000040462		13	97851727	97867945

TABLE 3 (Continued)

A2	OTTHUMT00013002963	TM9SF2-002	13	97851729	97897328
A2	OTTHUMT00013002962	TM9SF2-001	13	97851729	97913644
A2	ENST00000245361	TM9SF2	13	97851862	97913013
A2	OTTHUMT00013002964	TM9SF2-003	13	97864470	97888117
A2	ENSESTT00000040467		13	97886862	97897704
A2	ENSESTT00000040466		13	97886862	97905912
A2	ENSESTT00000040463		13	97886862	97913646
A2	ENSESTT00000040464		13	97886862	97913646
A2	ENSESTT00000040465		13	97886862	97913646
A2	ENSESTT00000040468		13	97890373	97891991
A2	OTTHUMT00013002965	TM9SF2-004	13	97890766	97891991
A2	ENSESTT00000040471		13	97891812	97905912
A2	ENSESTT00000040469		13	97891812	97913646
A2	ENSESTT00000040470		13	97891812	97913646
A2	ENSESTT00000040473		13	97897238	97905912
A2	ENSESTT00000040472		13	97897238	97909646
A2	ENSESTT00000040474		13	97899412	97905912
A2	ENSESTT00000040476		13	97912182	97912840
A2	OTTHUMT00013002970	bA214F16.4-001	13	97927367	97930623
A2	OTTHUMT00013002972	bA214F16.5-001	13	97932961	97933435
A2	ENSESTT00000040478		13	97956924	98215198
A2	ENSESTT00000040477		13	97956924	98221218
A2	OTTHUMT00013002980	CLYBL-001	13	97956924	98242825
A2	ENST00000323941	CLYBL	13	97956937	98242824
A2	OTTHUMT00013002981	CLYBL-002	13	97956945	98241868
A2	OTTHUMT00013002982	CLYBL-003	13	97956951	98242819
A2	OTTHUMT00013002974	bA279D17.1-001	13	98040336	98041226
A2	OTTHUMT00013002976	bA279D17.2-001	13	98076502	98077746
A2	ENSESTT00000040339		13	98076717	98079197
A2	ENSESTT00000040309		13	98123162	98215493

TABLE 3 (Continued)

A2	OTTHUMT00013002978	bA134O15.2-001	13	98124280	98125544
A2	OTTHUMT00013002983	CLYBL-004	13	98209116	98215493
A2	OTTHUMT00013002984	CLYBL-005	13	98209116	98215493
A2	ENSESTT00000040310		13	98213298	98242825
A2	ENSESTT00000040311		13	98215060	98242825
A2	ENSESTT00000040312		13	98215103	98242825
A2	OTTHUMT00013002986	CLYBL-007	13	98216572	98243149
A2	ENSESTT00000040313		13	98216572	98243149
A2	OTTHUMT00013002985	CLYBL-006	13	98221273	98241868
A2	ENSESTT00000040314		13	98235260	98241868
A2	OTTHUMT00013003004	bA12G12.1-001	13	98315452	98322164
A2	ENST00000267294	ZIC5	13	98315452	98322179
A2	OTTHUMT00013002994	ZIC2-001	13	98332294	98337019
A2	ENST00000245295	ZIC2	13	98332320	98337019
A2	ENSESTT00000040315		13	98332599	98335720
A2	OTTHUMT00013002995	ZIC2-002	13	98334544	98335747
A2	ENSESTT00000040316		13	98334544	98335747
A2	OTTHUMT00013002997	ZIC2-004	13	98334944	98335747
A2	ENSESTT00000040317		13	98334944	98335747
A2	OTTHUMT00013002998	ZIC2-005	13	98335044	98335729
A2	ENSESTT00000040318		13	98335044	98335729
A2	ENSESTT00000040319		13	98335196	98335747
A2	OTTHUMT00013002996	ZIC2-003	13	98335749	98336159
A2	ENSESTT00000040320		13	98335749	98336160
A2	OTTHUMT00013003006	bA12G12.3-001	13	98378024	98378429
A2	OTTHUMT00013003008	bA12G12.4-001	13	98412551	98413856
A2	ENSESTT00000040321		13	98439330	98660115
A2	OTTHUMT00013003012	PCCA-001	13	98439338	98880687
A2	ENSESTT00000040322		13	98439361	98660115
A2	ENSESTT00000040323		13	98439372	98660115

TABLE 3 (Continued)

A2	ENSESTT00000040324		13	98439395	98660115
A2	ENST00000310787	PCCA	13	98453138	98880421
A2	OTTHUMT00013003017	PCCA-006	13	98499456	98511880
A2	OTTHUMT00013003010	bA340C20.2-001	13	98500772	98501347
A2	ENSESTT00000040325		13	98585858	98660115
A2	OTTHUMT00013003014	PCCA-003	13	98643479	98775986
A2	ENSESTT00000040326		13	98643479	98881032
A2	ENSESTT00000040327		13	98643479	98881032
A2	ENSESTT00000040328		13	98643479	98881032
A2	OTTHUMT00013003013	PCCA-002	13	98656031	98690514
A2	ENSESTT00000040329		13	98660116	98881032
A2	OTTHUMT00013003015	PCCA-004	13	98718727	98880687
A2	OTTHUMT00013003016	PCCA-005	13	98718754	98842072
A2	OTTHUMT00013003028	bA151A6.5-001	13	98814695	98830540
A2	OTTHUMT00013003030	bA151A6.5-003	13	98829802	98831270
A2	OTTHUMT00013003029	bA151A6.5-002	13	98829814	98831412
A2	ENSESTT00000040330		13	98865680	98881032
A2	OTTHUMT00013003018	PCCA-007	13	98865682	98880687
A2	OTTHUMT00013003052	bA151A6.2-001	13	98881802	98934252
A2	ENST00000257302	Q9BT41	13	98881812	98883998
A2	ENSESTT00000040335		13	98882280	98934255
A2	ENSESTT00000040336		13	98882742	98934255
A2	ENSESTT00000040338		13	98882742	98939783
A2	OTTHUMT00013003055	bA151A6.2-004	13	98882750	98883924
A2	OTTHUMT00013003054	bA151A6.2-003	13	98882750	98939783
A2	ENSESTT00000040337		13	98882766	98883908
A2	OTTHUMT00013003056	bA151A6.2-005	13	98882769	98883908
A2	OTTHUMT00013003053	bA151A6.2-002	13	98882769	98938986
A2	OTTHUMT00013003034	bA151A6.4-001	13	98887578	98930372
A2	OTTHUMT00013003026	bA151A6.3-001	13	98890071	98890529

TABLE 3 (Continued)

A2	ENST00000245316		13	98890156	98890503
A2	OTTHUMT00013003036	bA113J24.1-001	13	98954189	99025171
A2	OTTHUMT00013003037	bA113J24.1-002	13	98954189	99025171
A2	ENST00000245302	NM_032813	13	98955249	98989063
A2	ENSESTT00000040332		13	98975664	98987865
A2	ENSESTT00000040334		13	98975708	98986863
A2	OTTHUMT00013003038	bA113J24.1-003	13	98975708	98992566
A2	OTTHUMT00013003042	bA113J24.1-007	13	98975790	98986863
A2	ENSESTT00000040333		13	98976035	98987865
A2	OTTHUMT00013003041	bA113J24.1-006	13	98985320	98986887
A2	OTTHUMT00013003039	bA113J24.1-004	13	98992475	99025134
A2	ENSESTT00000040331		13	98992500	99014571
A2	ENSESTT00000040306		13	99006632	99025080
A2	ENSESTT00000040307		13	99013216	99025060
A2	ENSESTT00000040308		13	99018487	99020990
A2	ENSESTT00000040305		13	99018833	99025134
A2	OTTHUMT00013003043	bA113J24.1-008	13	99018834	99025134
A2	OTTHUMT00013003040	bA113J24.1-005	13	99018996	99020990
A2	OTTHUMT00013003066	bA430M15.1-001	13	99058580	99409639
A2	OTTHUMT00013003062	bA190K16.2-001	13	99106806	99107314
A2	ENST00000310576		13	99106812	99107311
A2	ENST00000310558	Q9BXE6	13	99111961	99112335
A2	OTTHUMT00013003064	bA118F16.1-001	13	99291117	99294619
A3	ENSESTT00000026233		5	175066018	175091447
A3	ENST00000231683	HRH2	5	175091160	175092239
A3	ENST00000274620	CPLX2	5	175204533	175288154
A3	ENST00000274615	Q96NN7	5	175288871	175289290
A3	ENST00000334259	Q8N9L3	5	175289858	175290319
A3	ENST00000265097	THOC3	5	175367459	175376203
A3	ENST00000333723		5	175414077	175415294

TABLE 3 (Continued)

A3	ENST00000331171		5	175414077	175415309
A3	ENST00000330220		5	175414083	175415294
A3	ENST00000253490	Q8TBX6	5	175492772	175517499
A3	ENSESTT00000026234		5	175492798	175504815
A3	ENSESTT00000026235		5	175514024	175528803
A3	ENSESTT00000026236		5	175531948	175533047
A3	ENSESTT00000026237		5	175532319	175534252
A3	ENSESTT00000026238		5	175646358	175697849
A3	ENSESTT00000026239		5	175646582	175697880
A3	ENST00000303137	Q8NDZ2	5	175671357	175753911
A3	ENSESTT00000026240		5	175702967	175753921
A3	ENST00000330147		5	175714285	175714659
A3	ENST00000332772	Q8IZ15	5	175721351	175753371
A3	ENST00000298569	NM_020444	5	175753991	175769668
A3	ENSESTT00000026241		5	175755867	175762014
A3	ENSESTT00000026242		5	175758565	175763625
A3	ENST00000310389	NM_173664	5	175773428	175781426
A3	ENSESTT00000026243		5	175773498	175776896
A3	ENST00000327101	CGB7_HUMAN	5	175791865	175796511
A3	ENSESTT00000026244		5	175795923	175797685
A3	ENST00000274787	NM_138820	5	175796696	175797683
A3	ENSESTT00000026253		5	175800471	175824467
A3	ENST00000310407	CLTB	5	175800698	175824287
A3	ENST00000310418	NM_001834	5	175800698	175824287
A3	ENSESTT00000026254		5	175800716	175824462
A3	ENSESTT00000026246		5	175856279	175904920
A3	ENSESTT00000026245		5	175856279	175915561
A3	ENST00000261942	NM_014613	5	175856301	175917997
A3	ENSESTT00000026247		5	175856353	175861483
A3	ENSESTT00000026248		5	175907924	175914952

TABLE 3 (Continued)

A3	ENST00000274811	RNF44	5	175934638	175940396
A3	ENSESTT00000026249		5	175957282	175983069
A3	ENST00000261944	NM_017675	5	175957315	176003596
A3	ENSESTT00000026250		5	175986469	175992466
A3	ENSESTT00000026251		5	175994575	176000693
A3	ENSESTT00000026252		5	175994607	176000693
A3	ENST00000303991	NM_052899	5	176003728	176018054
A3	ENST00000335532	Q96PZ4	5	176004664	176007764
A3	ENST00000310112	SNCB	5	176028134	176037898
A3	ENST00000318682		5	176051522	176053904
A3	ENSESTT00000025931		5	176052504	176054064
A3	ENST00000310032	Q96S98	5	176055391	176066978
A3	ENSESTT00000025934		5	176055433	176064052
A3	ENSESTT00000025933		5	176055433	176065755
A3	ENSESTT00000025932		5	176055433	176065798
A3	ENST00000274797	FBXO23	5	176055504	176060711
A3	ENSESTT00000025937		5	176055510	176064052
A3	ENSESTT00000025936		5	176055510	176065755
A3	ENSESTT00000025935		5	176055510	176065798
A3	ENST00000298564	Q96FV3	5	176055540	176064848
A3	ENSESTT00000025938		5	176059752	176065560
A3	ENST00000318314	Q9H7Q1	5	176062303	176065622
A3	ENST00000329542		5	176270544	176282324
A3	ENSESTT00000025945		5	176276066	176278347
A3	ENST00000261961	Q96GP4	5	176281909	176287810
A3	ENSESTT00000025946		5	176281927	176285515
A3	ENST00000292432	HK3	5	176288997	176304083
A3	ENST00000323774	Q9BZR1	5	176313206	176377614
A3	ENST00000274827	NM_016290	5	176313206	176390539
A3	ENSESTT00000025947		5	176323181	176337765

TABLE 3 (Continued)

A3	ENST00000261948	NM_012279	5	176430663	176472523
A3	ENSESTT00000025948		5	176430665	176472752
A3	ENSESTT00000025949		5	176452251	176458816
A3	ENSESTT00000025951		5	176494862	176499035
A3	ENSESTT00000025950		5	176494862	176500300
A3	ENSESTT00000025952		5	176494947	176500300
A3	ENST00000292408	FGFR4	5	176497522	176505600
A3	ENST00000292410	NM_022963	5	176497527	176505600
A3	ENSESTT00000025956		5	176500568	176504578
A3	ENSESTT00000025957		5	176501099	176504578
A3	ENSESTT00000025958		5	176505115	176506050
A3	ENSESTT00000025959		5	176505286	176507234
A3	ENSESTT00000025960		5	176541049	176612169
A3	ENST00000298507	NSD1	5	176543028	176703698
A3	ENSESTT00000025961		5	176543093	176545330
A3	ENSESTT00000025963		5	176612187	176617686
A3	ENSESTT00000025966		5	176619693	176654715
A3	ENST00000312855		5	176673510	176674522
A3	ENSESTT00000025977		5	176699894	176702992
A3	ENSESTT00000025979		5	176709391	176710012
A3	ENST00000303270	RAB24	5	176709392	176711227
A3	ENSESTT00000025981		5	176711722	176714120
A3	ENSESTT00000025980		5	176711722	176714888
A3	ENST00000303204	PX19_HUMAN	5	176711736	176714888
A3	ENST00000303182	Q96ME3	5	176715058	176719769
A3	ENST00000303165	MXD3	5	176715151	176719769
A3	ENST00000303127	LMAN2	5	176739703	176759624
A3	ENSESTT00000025989		5	176765891	176779165
A3	ENST00000303066	RGS14	5	176765973	176780117
A3	ENSESTT00000025990		5	176775288	176776866

TABLE 3 (Continued)

A3	ENSESTT00000025991		5	176779454	176780554
A3	ENSESTT00000025992		5	176792400	176794461
A3	ENST00000324417	SLC34A1	5	176792400	176806801
A3	ENSESTT00000025994		5	176804912	176806144
A3	ENST00000319628		5	176808126	176808530
A3	ENST00000253496	F12	5	176810246	176817481
A3	ENSESTT00000025997		5	176834655	176841379
A3	ENSESTT00000026002		5	176834669	176842058
A3	ENSESTT00000026001		5	176834669	176844638
A3	ENSESTT00000025999		5	176834669	176849007
A3	ENSESTT00000026000		5	176834669	176849007
A3	ENSESTT00000025998		5	176834669	176850575
A3	ENST00000230673	GPRK6	5	176834797	176849743
A3	ENSESTT00000026007		5	176841092	176842058
A3	ENSESTT00000026006		5	176841092	176844638
A3	ENSESTT00000026004		5	176841092	176849007
A3	ENSESTT00000026005		5	176841092	176849007
A3	ENSESTT00000026003		5	176841092	176850575
A3	ENSESTT00000025996		5	176842854	176844638
A3	ENSESTT00000025995		5	176842854	176849007
A3	ENSESTT00000026008		5	176842854	176850575
A3	ENST00000323249	NM_030567	5	176854746	176864135
A3	ENSESTT00000026009		5	176854894	176864139
A3	ENST00000309007	DBN1	5	176864466	176881467
A3	ENST00000292385	NM_080881	5	176865288	176880013
A3	ENST00000327525	NM_005451	5	176891199	176905416
A3	ENST00000328562	Q14250	5	176891449	176904318
A3	ENST00000330043	Q9BXB9	5	176891449	176904318
A3	ENSESTT00000026018		5	176891939	177031673
A3	ENSESTT00000026017		5	176897221	177038162

TABLE 3 (Continued)

A3	ENSESTT00000026016		5	176897716	177038203
A3	ENST00000330641	Q96C91	5	176898295	176904318
A3	ENST00000331981	Q9BXB8	5	176898906	176904318
A3	ENST00000312943	Q9BQB3	5	176909731	176916090
A3	ENST00000274826	NM_024872	5	176911807	176917676
A3	ENST00000330503	DDX41	5	176919402	176924661
A3	ENSESTT00000026010		5	176926890	176943796
A3	ENST00000329540	NM_019057	5	176926890	176961637
A3	ENSESTT00000026015		5	176945068	177094067
A3	ENSESTT00000026011		5	176999291	177002623
A3	ENSESTT00000026013		5	176999295	177133284
A3	ENSESTT00000026012		5	176999295	177136090
A3	ENST00000328179	NM_017510	5	176999300	177003200
A3	ENSESTT00000026014		5	176999308	177136081
A3	ENSESTT00000035756		5	177000737	177003218
A3	ENSESTT00000035757		5	177000783	177136346
A3	ENSESTT00000035758		5	177001245	177136718
A3	ENSESTT00000035760		5	177007252	177150698
A3	ENST00000333469	NM_005451	5	177023996	177038192
A3	ENSESTT00000035801		5	177024173	177038191
A3	ENST00000292374	Q14250	5	177024246	177037114
A3	ENST00000331561	Q9BXB9	5	177024246	177037114
A3	ENST00000331867	Q96C91	5	177031099	177037114
A3	ENSESTT00000035800		5	177031469	177038195
A3	ENSESTT00000035802		5	177031684	177037209
A3	ENST00000332347	Q9BXB8	5	177031702	177037114
A3	ENST00000331704		5	177042509	177048868
A3	ENST00000333364	NM_024872	5	177044585	177050454
A3	ENSESTT00000035798		5	177045241	177050448
A3	ENSESTT00000035797		5	177045345	177050987

TABLE 3 (Continued)

A3	ENSESTT00000035799		5	177045385	177050435
A3	ENST00000330228	DDX41	5	177052393	177057440
A3	ENSESTT00000035796		5	177060391	177064902
A3	ENSESTT00000035761		5	177060392	177077299
A3	ENST00000274788	NM_019057	5	177060394	177072665
A3	ENSESTT00000035795		5	177065352	177077000
A3	ENSESTT00000035794		5	177078577	177094163
A3	ENSESTT00000035759		5	177132801	177136335
A3	ENST00000332598	NM_017510	5	177132810	177136711
A3	ENST00000029410	B4GALT7	5	177140813	177150931
A3	ENSESTT00000035762		5	177151883	177159317
A3	ENST00000302857	Q9HAI8	5	177159504	177159962
A3	ENST00000318185		5	177166961	177173303
A3	ENST00000303108	NM_173663	5	177263967	177321278
A3	ENST00000324610		5	177269572	177285570
A3	ENSESTT00000035793		5	177281869	177293899
A3	ENST00000329355	Q8TE30	5	177314834	177318658
A3	ENST00000331417		5	177377030	177378248
A3	ENST00000328082		5	177377030	177378266
A3	ENST00000303154	THOC3	5	177416128	177424868
A3	ENSESTT00000035763		5	177416183	177424870
A3	ENST00000332215	Q9H7L9	5	177511798	177512883
A3	ENST00000308304	PROP1	5	177532838	177536844
A3	ENSESTT00000035764		5	177582334	177589578
A3	ENSESTT00000035765		5	177589720	177594471
A3	ENSESTT00000035766		5	177593021	177594534
A3	ENST00000332649		5	177596176	177596784
A3	ENST00000274605	Y341_HUMAN	5	177654157	177663002
A3	ENSESTT00000035767		5	177660981	177662330
A3	ENST00000313376	YE01_HUMAN	5	177671613	177689151

TABLE 3 (Continued)

A3	ENSESTT00000035769		5	177671744	177688239
A3	ENSESTT00000035768		5	177671744	177689170
A3	ENSESTT00000035770		5	177684377	177689170
A3	ENSESTT00000035792		5	177690065	177694571
A3	ENST00000274606	NOLA2	5	177690069	177694497
A3	ENST00000327842	NM_022471	5	177726321	177727901
A3	ENST00000261953	HNRPAB	5	177745109	177751782
A3	ENSESTT00000035781		5	177745132	177746614
A3	ENSESTT00000035779		5	177745132	177751397
A3	ENSESTT00000035780		5	177745132	177751397
A3	ENSESTT00000035777		5	177745132	177751563
A3	ENSESTT00000035778		5	177745132	177751563
A3	ENSESTT00000035771		5	177745132	177751762
A3	ENSESTT00000035772		5	177745132	177751762
A3	ENSESTT00000035773		5	177745132	177751762
A3	ENSESTT00000035774		5	177745132	177751762
A3	ENSESTT00000035775		5	177745132	177751762
A3	ENSESTT00000035776		5	177745132	177751762
A3	ENST00000307328	NM_004499	5	177745440	177751225
A3	ENSESTT00000035782		5	177746443	177751762
A3	ENSESTT00000035783		5	177747326	177751762
A3	ENSESTT00000035790		5	177749103	177770674
A3	ENSESTT00000035787		5	177749103	177772179
A3	ENST00000308158	NM_032921	5	177749186	177773152
A3	ENSESTT00000035791		5	177749189	177763185
A3	ENSESTT00000035788		5	177749189	177772179
A3	ENSESTT00000035789		5	177749225	177772179
A3	ENSESTT00000035784		5	177750732	177751762
A3	ENSESTT00000035786		5	177779162	177788865
A3	ENSESTT00000035785		5	177891469	177892852

TABLE 3 (Continued)

A3	ENSESTT00000025813		5	178143870	178154143
A3	ENST00000316308	CLK4	5	178144219	178171217
A3	ENSESTT00000025820		5	178153016	178159432
A3	ENSESTT00000025818		5	178153016	178167610
A3	ENSESTT00000025819		5	178157479	178160721
A3	ENSESTT00000025816		5	178157835	178167668
A3	ENSESTT00000025814		5	178158920	178171217
A3	ENSESTT00000025815		5	178159118	178167738
A3	ENSESTT00000025817		5	178160838	178167632
A3	ENST00000306591	ZNF354A	5	178252662	178269624
A3	ENSESTT00000025812		5	178267657	178269949
A3	ENSESTT00000025811		5	178307485	178309124
A3	ENST00000331699		5	178307800	178322947
A3	ENSESTT00000025799		5	178400555	178423360
A3	ENST00000322434	ZNF354B	5	178400555	178425630
A3	ENSESTT00000025800		5	178401325	178406916
A3	ENST00000320451	ZNF271	5	178472120	178473301
A3	ENST00000320129	ZNF454	5	178481825	178507035
A3	ENSESTT00000025801		5	178483299	178505397
A3	ENST00000319065	Q8NHA9	5	178505697	178533033
A3	ENSESTT00000025802		5	178509517	178530722
A3	ENST00000231188	GRM6	5	178522259	178535546
A3	ENSESTT00000025810		5	178535880	178536808
A3	ENSESTT00000025803		5	178564407	178573529
A3	ENST00000315475	ZNF354C	5	178601202	178621290
A3	ENSESTT00000025809		5	178623365	178624025
A3	ENSESTT00000025808		5	178653824	178654193
A3	ENSESTT00000025806		5	178654498	178665387
A3	ENSESTT00000025807		5	178661813	178663369
A3	ENST00000251582	ADAMTS2	5	178662264	178699481

TABLE 3 (Continued)

A3	ENST00000274609	ADAMTS2	5	178691731	178885702
A3	ENSESTT00000025805		5	178692740	178699439
A3	ENSESTT00000025804		5	178917905	178919135
A3	ENSESTT00000035851		5	179043326	179055582
A3	ENSESTT00000035852		5	179090766	179129747
A3	ENSESTT00000035853		5	179099890	179129747
A3	ENSESTT00000035854		5	179099924	179129747
A3	ENST00000319449		5	179100164	179146212
A3	ENSESTT00000035855		5	179100278	179107690
A3	ENSESTT00000035856		5	179107577	179131807
A3	ENSESTT00000035857		5	179133252	179146705
A3	ENST00000319571	NM_030970	5	179140510	179140581
A3	ENST00000258707		5	179148300	179148368
A3	ENSESTT00000035915		5	179150871	179154755
A3	ENSESTT00000035916		5	179150871	179154755
A3	ENSESTT00000035908		5	179150871	179160390
A3	ENSESTT00000035909		5	179150871	179160390
A3	ENST00000326748	HNRPH1	5	179150872	179160359
A3	ENSESTT00000035918		5	179151147	179154344
A3	ENSESTT00000035910		5	179151147	179160390
A3	ENSESTT00000035917		5	179151282	179154755
A3	ENSESTT00000035911		5	179151282	179160390
A3	ENST00000329433		5	179152814	179157705
A3	ENSESTT00000035914		5	179154867	179159858
A3	ENSESTT00000035912		5	179154867	179160364
A3	ENSESTT00000035913		5	179157887	179160362
A3	ENST00000331874	Q8NA96	5	179176906	179177448
A3	ENSESTT00000035858		5	179184188	179186866
A3	ENST00000328856	Q86VE1	5	179184188	179187649
A3	ENSESTT00000035859		5	179215326	179231463

TABLE 3 (Continued)

A3	ENSESTT00000035907		5	179215692	179217634
A3	ENST00000329156		5	179230857	179231354
A3	ENSESTT00000035861		5	179235589	179245048
A3	ENSESTT00000035860		5	179235589	179267552
A3	ENST00000247461	CANX	5	179235655	179267584
A3	ENSESTT00000035865		5	179240421	179242025
A3	ENSESTT00000035862		5	179243792	179267552
A3	ENSESTT00000035863		5	179246533	179256391
A3	ENSESTT00000035864		5	179263334	179267552
A3	ENST00000292599	MAML1	5	179269772	179313948
A3	ENSESTT00000035866		5	179303154	179307853
A3	ENST00000298607	NM_024978	5	179314421	179314996
A3	ENST00000292596	LTC4S	5	179330648	179333175
A3	ENSESTT00000035868		5	179330696	179333148
A3	ENSESTT00000035869		5	179330774	179333175
A3	ENSESTT00000035870		5	179332229	179332994
A3	ENSESTT00000035867		5	179332243	179333174
A3	ENST00000292591	MGAT4B	5	179334262	179343246
A3	ENSESTT00000035906		5	179334633	179337617
A3	ENSESTT00000035901		5	179334633	179338133
A3	ENSESTT00000035902		5	179334633	179338133
A3	ENSESTT00000035895		5	179334633	179343595
A3	ENSESTT00000035903		5	179334876	179338133
A3	ENSESTT00000035904		5	179334883	179338133
A3	ENSESTT00000035900		5	179334883	179342992
A3	ENSESTT00000035896		5	179334883	179343595
A3	ENSESTT00000035897		5	179334883	179343595
A3	ENSESTT00000035905		5	179335007	179338133
A3	ENSESTT00000035898		5	179335007	179343595
A3	ENSESTT00000035899		5	179337988	179343595

TABLE 3 (Continued)

A3	ENSESTT00000035871		5	179357567	179374487
A3	ENST00000292588	SQSTM1	5	179357599	179373255
A3	ENSESTT00000035894		5	179370411	179373916
A3	ENST00000292586	NM_016175	5	179373936	179378682
A3	ENSESTT00000035893		5	179373938	179395443
A3	ENST00000328625	NM_016175	5	179374053	179395458
A3	ENST00000261956 O75163		5	179398735	179444516
A3	ENST00000312107	NM_015043	5	179400110	179407115
A3	ENSESTT00000035892		5	179400203	179402065
A3	ENSESTT00000035891		5	179400212	179402552
A3	ENSESTT00000035890		5	179400359	179404512
A3	ENSESTT00000035889		5	179409551	179415194
A3	ENSESTT00000035887		5	179415747	179444521
A3	ENSESTT00000035888		5	179416330	179444521
A3	ENSESTT00000035886		5	179492143	179507146
A3	ENSESTT00000035885		5	179492144	179514948
A3	ENSESTT00000035884		5	179492144	179549976
A3	ENSESTT00000035881		5	179492144	179608429
A3	ENST00000261947	RNF130	5	179492168	179608763
A3	ENSESTT00000035882		5	179514859	179608429
A3	ENSESTT00000035883		5	179516790	179608429
A3	ENST00000332144		5	179622379	179623665
A3	ENST00000274820	NM_175062	5	179638729	179745830
A3	ENST00000316131		5	179763049	179763664
A3	ENSESTT00000035880		5	179772812	179779418
A3	ENSESTT00000035877		5	179772812	179817172
A3	ENST00000057533	NM_139069	5	179773046	179817223
A3	ENST00000316123	MAPK9	5	179773046	179817223
A3	ENSESTT00000035879		5	179783749	179798444
A3	ENSESTT00000035878		5	179790169	179801503

TABLE 3 (Continued)

A3	ENST00000328081		5	179794621	179796637
A3	ENSESTT00000035876		5	179816486	179828537
A3	ENST00000253778	GFPT2	5	179837361	179875263
A3	ENSESTT00000035874		5	179837891	179868310
A3	ENSESTT00000035875		5	179861517	179867483
A3	ENSESTT00000035873		5	179868152	179889985
A3	ENSESTT00000035872		5	179872531	179889987
A3	ENST00000261951	NM_015455	5	180065924	180110862
A3	ENSESTT00000035640		5	180065968	180087268
A3	ENSESTT00000035639		5	180065968	180101184
A3	ENST00000332929	Q8TAJ0	5	180112873	180113151
A3	ENSESTT00000035680		5	180126767	180128147
A3	ENST00000292641	SCGB3A1	5	180126768	180128145
A3	ENSESTT00000035679		5	180139821	180148082
A3	ENST00000261937	FLT4	5	180145626	180186207
A3	ENSESTT00000035678		5	180162667	180166645
A3	ENSESTT00000035677		5	180166890	180186286
A3	ENST00000315712	Q8NHB0	5	180229572	180230422
A3	ENST00000307832	Q8NGV0	5	180275785	180276720
A3	ENSESTT00000035676		5	180327203	180328628
A3	ENSESTT00000035675		5	180327203	180328768
A3	ENST00000333055	MGAT1	5	180327210	180352203
A3	ENSESTT00000035663		5	180327543	180339485
A3	ENST00000307826	Q8NBL8	5	180328296	180329633
A3	ENSESTT00000035662		5	180329112	180339503
A3	ENSESTT00000035659		5	180329155	180345445
A3	ENSESTT00000035661		5	180329332	180340541
A3	ENSESTT00000035665		5	180332068	180352229
A3	ENSESTT00000035664		5	180332092	180339429
A3	ENSESTT00000035660		5	180332309	180345357

TABLE 3 (Continued)

A3	ENSESTT00000035658		5	180344545	180346738
A3	ENSESTT00000035666		5	180345508	180352200
A3	ENSESTT00000035657		5	180345511	180346792
A3	ENSESTT00000035673		5	180384273	180397228
A3	ENSESTT00000035672		5	180384335	180397947
A3	ENST00000330037	NM_152283	5	180385559	180387766
A3	ENST00000302108		5	180386417	180388132
A3	ENSESTT00000035674		5	180387577	180397213
A3	ENST00000231229	NM_024850	5	180435821	180487566
A3	ENSESTT00000035641		5	180435955	180448194
A3	ENSESTT00000035642		5	180448211	180487568
A3	ENST00000301996	BTNL3	5	180525529	180543025
A3	ENST00000298708	NM_152547	5	180582152	180590225
A3	ENSESTT00000035643		5	180589782	180591964
A3	ENST00000327705	Q8N324	5	180590141	180598180
A3	ENSESTT00000035644		5	180592305	180595974
A3	ENST00000328095		5	180635802	180637319
A3	ENST00000328767		5	180650805	180651920
A3	ENST00000329365		5	180661176	180661966
A3	ENST00000328275	Q8NGV1	5	180691605	180692552
A3	ENSESTT00000035645		5	180728586	180731091
A3	ENST00000274773	Q96J89	5	180731275	180736815
A3	ENSESTT00000035646		5	180734864	180739766
A3	ENSESTT00000035671		5	180739916	180741785
A3	ENST00000334421	TRIM7	5	180740159	180741772
A3	ENST00000312487	Q96Q10	5	180760899	180772041
A3	ENST00000315073	TRIM41	5	180760917	180772467
A3	ENSESTT00000035647		5	180769651	180772470
A3	ENSESTT00000035648		5	180770071	180772470
A3	ENST00000274821	GNB2L1	5	180773587	180780586

TABLE 3 (Continued)

A3	ENSESTT00000035670		5	180773591	180776245
A3	ENSESTT00000035649		5	180783187	180783850
A3	ENSESTT00000035669		5	180791085	180796857
A3	ENST00000327725	NM_022907	5	180792443	180792880
A3	ENSESTT00000035668		5	180793051	180796920
A3	ENSESTT00000035667		5	180793672	180796987
A3	ENST00000327767	TRIM52	5	180794077	180797476
A3	ENSESTT00000035652		5	180797875	180800890
A3	ENSESTT00000035651		5	180797875	180800918
A3	ENSESTT00000035650		5	180797875	180800920
A3	ENSESTT00000035653		5	180854088	180864732
A3	ENSESTT00000035654		5	180866068	180886905
A3	ENST00000333864	O4F3_HUMAN	5	180903950	180904888
A3	ENSESTT00000035655		5	180988607	180991662
A3	ENSESTT00000035656		5	180990904	180991624
A3	ENST00000332522		5	181008629	181009085
A4	OTTHUMT00013000706	FLT1-001	13	26672489	26867232
A4	ENST00000282397	FLT1	13	26675304	26867254
A4	ENSESTT00000037419		13	26740528	26762136
A4	ENSESTT00000037420		13	26749569	26762136
A4	ENSESTT00000037421		13	26756741	26762136
A4	ENSESTT00000037417		13	26769173	26810483
A4	ENSESTT00000037415		13	26769173	26839090
A4	ENSESTT00000037418		13	26772654	26810483
A4	ENSESTT00000037416		13	26772654	26839090
A4	ENSESTT00000037414		13	26839038	26867241
A4	OTTHUMT00013000708	bA57H24.1-001	13	26970970	26972189
A4	ENST00000255315	C13orf12	13	27031241	27051059
A4	OTTHUMT00013000710	bA97E23.1-001	13	27031241	27051062
A4	OTTHUMT00013000711	bA97E23.1-002	13	27031241	27051062

TABLE 3 (Continued)

A4	ENSESTT00000037329		13	27031251	27051047
A4	ENSESTT00000037330		13	27031270	27034993
A4	ENSESTT00000037328		13	27032876	27050475
A4	ENSESTT00000037342		13	27044487	27050337
A4	OTTHUMT00013000715	bA97E23.2-002	13	27072201	27076694
A4	ENST00000266943	NM_181785	13	27072854	27090734
A4	OTTHUMT00013000714	bA97E23.2-001	13	27072854	27091107
A4	ENSESTT00000037341		13	27073385	27082982
A4	ENSESTT00000037340		13	27073407	27085276
A4	ENSESTT00000037339		13	27085474	27091111
A4	OTTHUMT00013000718	bA97E23.3-001	13	27094523	27096158
A4	ENSESTT00000037338		13	27094840	27095270
A4	OTTHUMT00013000720	bA161P17.1-001	13	27150695	27151074
A4	ENST00000255289	Q8N5E2	13	27397451	27875542
A4	OTTHUMT00013000739	bA274A8.1-002	13	27397451	27875892
A4	OTTHUMT00013000726	bA351N4.3-003	13	27611516	27622691
A4	OTTHUMT00013000725	bA351N4.3-002	13	27611760	27622691
A4	OTTHUMT00013000724	bA351N4.3-001	13	27611924	27622691
A4	ENSESTT00000037331		13	27653849	27673230
A4	OTTHUMT00013000722	bA351N4.2-001	13	27678843	27680052
A4	OTTHUMT00013000738	bA274A8.1-001	13	27800764	27875873
A4	ENSESTT00000037332		13	27800922	27869445
A4	ENST00000323380	Q8N642	13	27848687	27859887
A4	OTTHUMT00013000730	bA274A8.2-001	13	27849033	27859887
A4	ENSESTT00000037337		13	27849033	27859887
A4	OTTHUMT00013000732	SLC7A1-001	13	27881547	27967721
A4	ENST00000266949	SLC7A1	13	27886617	27908325
A4	OTTHUMT00013000733	SLC7A1-002	13	27889004	27891647
A4	ENSESTT00000037336		13	27889008	27894543
A4	ENSESTT00000037335		13	27894554	27902860

TABLE 3 (Continued)

A4	ENSESTT00000037333		13	27907953	27967721
A4	ENSESTT00000037334		13	27907955	27958929
A4	OTTHUMT00013000734	SLC7A1-003	13	27907961	27958929
A4	ENST00000330321	Q8NI69	13	27964863	27965033
A4	ENST00000255303	Q8TE30	13	28014062	28017889
A4	ENST00000310635	Q9P1E1	13	28017953	28018969
A4	OTTHUMT00013000746	UBL3-001	13	28136508	28222821
A4	ENST00000241470		13	28136546	28222715
A4	ENSESTT00000037443		13	28138914	28222162
A4	ENSESTT00000037445		13	28139131	28144336
A4	ENSESTT00000037444		13	28139753	28222162
A4	OTTHUMT00013000744	bA90M5.2-001	13	28238096	28238306
A4	OTTHUMT00013000748	bA90M5.4-001	13	28290784	28298788
A4	ENSESTT00000037431		13	28310040	28322630
A4	ENST00000241471	Q9H523	13	28310043	28322495
A4	OTTHUMT00013000742	bA90M5.1-001	13	28310043	28322628
A4	OTTHUMT00013000750	bA629E24.1-001	13	28479753	28481012
A4	OTTHUMT00013000752	bA490N5.1-001	13	28526203	28526723
A4	OTTHUMT00013000754	bA374F3.1-001	13	28580177	28679585
A4	ENSESTT00000037442		13	28580405	28603509
A4	ENST00000261628	NM_032116	13	28580617	28679163
A4	ENSESTT00000037439		13	28627583	28655933
A4	ENSESTT00000037440		13	28627583	28679620
A4	ENSESTT00000037438		13	28627618	28679146
A4	ENSESTT00000037441		13	28627625	28679181
A4	OTTHUMT00013000756	bA374F3.2-001	13	28668272	28668860
A4	ENST00000319015		13	28668284	28668872
A4	OTTHUMT00013000758	bA374F3.3-001	13	28688497	28692033
A4	OTTHUMT00013000761	bA374F3.4-002	13	28713496	28736232
A4	ENSESTT00000037437		13	28713496	28736232

TABLE 3 (Continued)

A4	OTTHUMT00013000760	bA374F3.4-001	13	28714620	28737898
A4	OTTHUMT00013000763	bA374F3.4-004	13	28729879	28736287
A4	OTTHUMT00013000762	bA374F3.4-003	13	28729879	28749282
A4	OTTHUMT00013000764	bA374F3.4-005	13	28735317	28745169
A4	OTTHUMT00013000765	bA374F3.4-006	13	28746140	28749101
A4	OTTHUMT00013000772	bA223E19.1-001	13	28800091	28800795
A4	ENST00000302464	UBE2L3	13	28800128	28800592
A4	OTTHUMT00013000792	bA550P23.2-001	13	28818545	28820625
A4	OTTHUMT00013000777	HMGB1-004	13	28831990	28838109
A4	ENST00000255320	HMGB1	13	28831997	28838013
A4	ENSESTT00000037436		13	28833364	28838063
A4	OTTHUMT00013000774	HMGB1-001	13	28833566	28836447
A4	OTTHUMT00013000775	HMGB1-002	13	28833621	28836447
A4	OTTHUMT00013000776	HMGB1-003	13	28833633	28838075
A4	ENSESTT00000037435		13	28834423	28989492
A4	OTTHUMT00013000781	HMGB1-008	13	28834483	28835401
A4	OTTHUMT00013000782	HMGB1-009	13	28834675	28836526
A4	ENSESTT00000037434		13	28834713	28989872
A4	OTTHUMT00013000779	HMGB1-006	13	28834750	28836793
A4	OTTHUMT00013000778	HMGB1-005	13	28835348	28838651
A4	OTTHUMT00013000780	HMGB1-007	13	28835448	28838051
A4	OTTHUMT00013000794	bA550P23.3-001	13	28911734	28915598
A4	OTTHUMT00013000796	bA550P23.4-001	13	28913780	28915034
A4	OTTHUMT00013000798	bA550P23.5-001	13	28925807	28926830
A4	OTTHUMT00013000801	bA121O19.1-002	13	28989830	29003611
A4	ENST00000255304	NM_005800	13	28989920	29031493
A4	OTTHUMT00013000800	bA121O19.1-001	13	28989920	29031686
A4	ENSESTT00000037432		13	28990053	29003351
A4	ENSESTT00000037433		13	28990087	29003261
A4	ENSESTT00000042385		13	29014843	29031687

TABLE 3 (Continued)

A4	OTTHUMT00013000806	ALOX5AP-001	13	29107645	29136556
A4	ENST00000255317	ALOX5AP	13	29107669	29136562
A4	OTTHUMT00013000807	ALOX5AP-002	13	29114473	29116533
A4	OTTHUMT00013000804	bA469L23.2-001	13	29175343	29182782
A4	ENSESTT00000042392		13	29175343	29183024
A4	ENSESTT00000042393		13	29202772	29255532
A4	OTTHUMT00013000810	bA252M21.1-001	13	29254688	29255532
A4	ENSESTT00000042394		13	29254696	29255532
A4	ENST00000218987	NM_032849	13	29278328	29297708
A4	OTTHUMT00013000812	bA252M21.2-001	13	29278328	29297709
A4	OTTHUMT00013000813	bA252M21.2-002	13	29278843	29296586
A4	ENSESTT00000042395		13	29289536	29297968
A4	ENSESTT00000042471		13	29302805	29303625
A4	OTTHUMT00013000816	bA252M21.3-001	13	29302814	29303619
A4	OTTHUMT00013000818	bA252M21.4-001	13	29303638	29304723
A4	OTTHUMT00013000819	bA252M21.4-002	13	29303766	29304337
A4	OTTHUMT00013000823	bA252M21.5-002	13	29304840	29305327
A4	OTTHUMT00013000822	bA252M21.5-001	13	29304840	29347639
A4	ENST00000320096	NM_152325	13	29304853	29347044
A4	ENSESTT00000042396		13	29329009	29347274
A4	OTTHUMT00013000826	bA252M21.6-001	13	29345426	29349760
A4	OTTHUMT00013000828	bA252M21.7-001	13	29367299	29368275
A4	OTTHUMT00013000830	bA173P16.1-001	13	29471238	29487836
A4	ENSESTT00000042440		13	29508750	29511044
A4	ENSESTT00000042437		13	29508750	29511319
A4	ENSESTT00000042416		13	29508750	29520230
A4	ENSESTT00000042418		13	29508750	29520230
A4	ENSESTT00000042420		13	29508750	29520230
A4	ENSESTT00000042421		13	29508750	29520230
A4	ENSESTT00000042403		13	29508750	29520554

TABLE 3 (Continued)

A4	ENSESTT00000042405		13	29508750	29520554
A4	ENSESTT00000042406		13	29508750	29520554
A4	ENSESTT00000042407		13	29508750	29520554
A4	ENSESTT00000042438		13	29508750	29520623
A4	ENSESTT00000042443		13	29508750	29520623
A4	ENSESTT00000042444		13	29508750	29520623
A4	ENSESTT00000042445		13	29508750	29520623
A4	ENSESTT00000042402		13	29508750	29523880
A4	ENSESTT00000042404		13	29508750	29523880
A4	ENSESTT00000042413		13	29508750	29523880
A4	ENSESTT00000042414		13	29508750	29523880
A4	ENSESTT00000042442		13	29508762	29509663
A4	OTTHUMT00013000835	bA173P16.2-004	13	29508762	29510705
A4	OTTHUMT00013000832	bA173P16.2-001	13	29508765	29534064
A4	OTTHUMT00013000833	bA173P16.2-002	13	29508765	29534064
A4	OTTHUMT00013000834	bA173P16.2-003	13	29508765	29534064
A4	ENSESTT00000042441		13	29509002	29511044
A4	ENSESTT00000042422		13	29509002	29520230
A4	ENSESTT00000042423		13	29509002	29520230
A4	ENSESTT00000042408		13	29509002	29520554
A4	ENSESTT00000042409		13	29509002	29520554
A4	ENSESTT00000042446		13	29509002	29520623
A4	ENSESTT00000042447		13	29509002	29520623
A4	ENSESTT00000042415		13	29509002	29523880
A4	ENSESTT00000042417		13	29509002	29523880
A4	ENST00000239887	HSPH1	13	29509455	29533719
A4	ENST00000320027	HSPH1	13	29509455	29533719
A4	ENSESTT00000042439		13	29509641	29511319
A4	ENSESTT00000042424		13	29510418	29520230
A4	ENSESTT00000042410		13	29510418	29520554

TABLE 3 (Continued)

A4	ENSESTT00000042448		13	29510418	29520623
A4	ENSESTT00000042419		13	29510418	29523880
A4	ENSESTT00000042425		13	29510574	29520230
A4	ENSESTT00000042432		13	29510574	29522321
A4	ENSESTT00000042428		13	29510574	29523880
A4	OTTHUMT00013000836	bA173P16.2-005	13	29510676	29511319
A4	ENSESTT00000042426		13	29510913	29520230
A4	ENSESTT00000042427		13	29510913	29520230
A4	ENSESTT00000042411		13	29510913	29520554
A4	ENSESTT00000042449		13	29510913	29520623
A4	ENSESTT00000042433		13	29510913	29522321
A4	ENSESTT00000042429		13	29510913	29523880
A4	ENSESTT00000042430		13	29510913	29523880
A4	ENSESTT00000042436		13	29515928	29520230
A4	ENSESTT00000042412		13	29515928	29520554
A4	ENSESTT00000042401		13	29515928	29520623
A4	ENSESTT00000042434		13	29515928	29522321
A4	ENSESTT00000042431		13	29515928	29523880
A4	ENSESTT00000042435		13	29520095	29522321
A4	ENSESTT00000042400		13	29527641	29534068
A4	ENSESTT00000042399		13	29527667	29534489
A4	ENSESTT00000042397		13	29572112	29633161
A4	OTTHUMT00013000842	bA367C11.1-001	13	29572112	29704409
A4	ENSESTT00000042398		13	29632535	29656892
A4	OTTHUMT00013000843	bA367C11.1-002	13	29632544	29656892
A4	ENST00000310319	Q9P1E1	13	29675357	29676373
A4	OTTHUMT00013000846	bA367C11.2-001	13	29683426	29685058
A4	ENST00000298386	LGR8_HUMAN	13	30111674	30175009
A4	OTTHUMT00013000848	bA432E15.1-001	13	30111679	30175009
A4	ENSESTT00000037457		13	30218905	30325581

TABLE 3 (Continued)

A4	ENSESTT00000037458		13	30218972	30324856
A4	OTTHUMT00013000850	Em:AC002525.1-001	13	30324632	30325609
A4	ENST00000306722		13	30324717	30325498
A4	OTTHUMT00013000852	bA207N4.2-001	13	30397451	30403776
A4	OTTHUMT00013000854	bA37E23.1-001	13	30403437	30668794
A4	ENSESTT00000037459		13	30403557	30451064
A4	OTTHUMT00013000855	bA37E23.1-002	13	30403692	30410757
A4	ENSESTT00000037460		13	30403692	30410757
A4	ENST00000318671	Q9H551	13	30403933	30474153
A4	OTTHUMT00013000856	bA37E23.1-003	13	30433001	30489607
A4	ENST00000267067	Q99993	13	30457981	30529546
A4	ENSESTT00000037461		13	30533334	30543341
A4	ENSESTT00000037462		13	30545609	30551036
A4	ENST00000261575	NM_023037	13	30574067	30667597
A4	ENSESTT00000037446		13	30603413	30668738
A4	ENSESTT00000037447		13	30606797	30609886
A4	OTTHUMT00013000858	bA37E23.1-005	13	30621676	30650976
A4	ENSESTT00000037448		13	30621802	30637786
A4	ENSESTT00000037449		13	30626285	30634614
A4	ENSESTT00000037450		13	30626290	30637786
A4	ENSESTT00000037453		13	30626512	30650976
A4	ENSESTT00000037454		13	30626512	30650976
A4	ENSESTT00000037452		13	30626512	30661841
A4	ENSESTT00000037451		13	30626512	30661882
A4	OTTHUMT00013000859	bA37E23.1-006	13	30634526	30661776
A4	ENSESTT00000037455		13	30659981	30668767
A4	OTTHUMT00013000857	bA37E23.1-004	13	30659988	30667640
A4	ENSESTT00000037456		13	30666374	30668767
A4	OTTHUMT00013000870	bA37E23.5-001	13	30670291	30670849
A4	OTTHUMT00013000868	bA37E23.4-001	13	30680855	30683420

TABLE 3 (Continued)

A4	ENSESTT00000037463		13	30687607	30698292
A4	OTTHUMT00013003674	BRCA2-001	13	30687617	30771806
A4	ENSESTT00000037464		13	30687640	30698728
A4	ENST00000267071	BRCA2	13	30688598	30770907
A4	ENSESTT00000037465		13	30735410	30752226
A4	ENSESTT00000037466		13	30748806	30752226
A4	OTTHUMT00013003675	BRCA2-002	13	30751977	30770409
A4	OTTHUMT00013000866	bA37E23.3-001	13	30756797	30758245
A4	OTTHUMT00013000872	bA298P3.2-001	13	30773713	30800270
A4	OTTHUMT00013000873	bA298P3.2-002	13	30773810	30800270
A4	OTTHUMT00013000874	bA298P3.2-003	13	30773814	30788840
A4	OTTHUMT00013000875	bA298P3.2-004	13	30773954	30800151
A4	ENSESTT00000037479		13	30774634	30800259
A4	ENSESTT00000037481		13	30774983	30779922
A4	ENST00000267044	NM_052818	13	30775079	30779464
A4	ENST00000306588	Q8WTU5	13	30775281	30800219
A4	OTTHUMT00013000876	bA298P3.2-005	13	30775816	30800151
A4	OTTHUMT00013000878	bA298P3.2-007	13	30778590	30800143
A4	ENST00000332066	NM_014081	13	30779092	30779373
A4	OTTHUMT00013000877	bA298P3.2-006	13	30797059	30800151
A4	OTTHUMT00013000879	bA298P3.2-008	13	30797495	30805091
A4	ENSESTT00000037480		13	30797642	30800151
A4	OTTHUMT00013000888	bA298P3.3-001	13	30804554	30818619
A4	ENSESTT00000037478		13	30804625	30814984
A4	ENST00000267052	NM_033111	13	30804924	30818554
A4	ENSESTT00000037476		13	30815994	30910936
A4	OTTHUMT00013000896	bA11K16.4-001	13	30816130	30816268
A4	OTTHUMT00013000890	bA11K16.1-001	13	30849411	30850978
A4	OTTHUMT00013000892	bA11K16.2-001	13	30852732	30890057
A4	OTTHUMT00013000894	bA11K16.3-001	13	30864436	30870629

TABLE 3 (Continued)

A4	ENST00000267068	NM_014887	13	30889031	30910919
A4	OTTHUMT00013000897	bA11K16.4-002	13	30889031	30910919
A4	ENSESTT00000037473		13	30889508	30894409
A4	ENSESTT00000037471		13	30889508	30908302
A4	ENSESTT00000037474		13	30889684	30893770
A4	OTTHUMT00013000898	bA11K16.4-003	13	30889998	30908006
A4	ENSESTT00000037472		13	30899013	30908193
A4	ENSESTT00000037467		13	30907172	30908872
A4	ENSESTT00000037477		13	30908368	30910932
A4	ENSESTT00000037470		13	30908503	30910929
A4	OTTHUMT00013000899	bA11K16.4-004	13	30908564	30910962
A4	ENSESTT00000037475		13	30908708	30910962
A4	ENSESTT00000037468		13	30958592	31031343
A4	OTTHUMT00013000906	49J10.1-006	13	30958624	31118238
A4	ENST00000261578	APRIN	13	30958642	31145465
A4	OTTHUMT00013000907	49J10.1-007	13	30958685	31118238
A4	OTTHUMT00013000908	49J10.1-008	13	30958688	31024465
A4	ENSESTT00000037469		13	30958704	31021469
A4	OTTHUMT00013000904	49J10.1-002	13	30958706	31022754
A4	ENSESTT00000037369		13	31071946	31113272
A4	ENSESTT00000037370		13	31073121	31113272
A4	OTTHUMT00013000905	49J10.1-004	13	31073219	31079179
A4	ENSESTT00000037371		13	31073219	31079179
A4	OTTHUMT00013000915	bA380B4.1-002	13	31125470	31148043
A4	OTTHUMT00013000914	bA380B4.1-001	13	31125470	31150157
A4	ENSESTT00000037372		13	31130670	31143217
A4	OTTHUMT00013000918	bA380B4.2-001	13	31249569	31283788
A4	OTTHUMT00013000920	bA218A18.1-001	13	31325521	31326539
A4	ENSESTT00000037388		13	31385588	31388081
A4	OTTHUMT00013003671	KL-002	13	31388571	31436440

TABLE 3 (Continued)

A4	ENST00000255481 KL		13	31388571	31438279
A4	OTTHUMT00013003670	KL-001	13	31388571	31438282
A4	OTTHUMT00013000926	bA81F11.1-001	13	31475278	31578143
A4	ENSESTT00000037373		13	31476827	31478958
A4	ENSESTT00000037386		13	31477004	31484030
A4	ENST00000255486	STARD13	13	31477730	31558159
A4	ENSESTT00000037387		13	31482009	31484030
A4	OTTHUMT00013000930	bA81F11.1-005	13	31483921	31485330
A4	OTTHUMT00013000924	bA81F11.4-001	13	31494713	31495797
A4	ENSESTT00000037374		13	31494713	31495802
A4	OTTHUMT00013000928	bA81F11.1-003	13	31501869	31558216
A4	ENSESTT00000037379		13	31502223	31578161
A4	ENSESTT00000037378		13	31502350	31722654
A4	OTTHUMT00013000929	bA81F11.1-004	13	31510566	31539759
A4	ENSESTT00000037380		13	31510566	31539761
A4	OTTHUMT00013000927	bA81F11.1-002	13	31527573	31657844
A4	OTTHUMT00013000922	bA81F11.2-001	13	31530724	31536546
A4	ENSESTT00000037385		13	31530724	31536546
A4	ENSESTT00000037384		13	31547153	31657728
A4	OTTHUMT00013000936	bA81F11.3-001	13	31562078	31657873
A4	ENSESTT00000037383		13	31647964	31657873
A4	OTTHUMT00013000938	bA363P13.1-001	13	31649690	31653471
A4	ENSESTT00000037375		13	31649690	31653473
A4	ENSESTT00000037381		13	31705816	31720135
A4	OTTHUMT00013000940	bA141M1.1-001	13	31705983	31707403
A4	ENSESTT00000037382		13	31705983	31707414
A4	OTTHUMT00013000942	bA141M1.4-001	13	31720744	31722761
A4	ENSESTT00000037377		13	31721064	31722742
A4	OTTHUMT00013000946	bA141M1.3-001	13	31727343	32048905
A4	OTTHUMT00013000948	bA141M1.3-003	13	31883467	31896459

TABLE 3 (Continued)

A4	ENSESTT00000037376		13	31883467	31896459
A4	OTTHUMT00013000944	bA37L2.1-001	13	31983104	31983659
A4	OTTHUMT00013000947	bA141M1.3-002	13	32026796	32048861
A4	OTTHUMT00013000954	bA179A7.2-001	13	32029573	32032065
A4	OTTHUMT00013000952	RFC3-001	13	32190203	32209633
A4	ENSESTT00000039806		13	32190245	32209644
A4	ENSESTT00000039805		13	32190245	32338382
A4	ENSESTT00000039804		13	32190245	32338695
A4	ENST00000255484	RFC3	13	32190316	32208432
A4	OTTHUMT00013000956	bA218I21.1-001	13	32454566	32455447
A4	OTTHUMT00013000958	bA266E6.1-001	13	32807587	33012822
A4	ENSESTT00000039807		13	32807587	33012822
A4	OTTHUMT00013000959	bA266E6.1-002	13	32905983	32906487
A4	ENSESTT00000039808		13	32905983	32906487
A4	OTTHUMT00013000962	bA266E6.2-001	13	32946341	32946803
A4	OTTHUMT00013000972	NBEA-001	13	33314456	34044873
A4	ENST00000310336	NBEA	13	33314958	34043128
A5	ENSESTT00000038767		7	101019421	101400637
A5	ENSESTT00000038766		7	101019421	101485396
A5	ENSESTT00000038765		7	101019421	101487431
A5	OTTHUMT00007006261	CUTL1	7	101019473	101487362
A5	ENST00000292538	CUTL1	7	101019492	101486563
A5	ENST00000292535	CUTL1	7	101021063	101453321
A5	ENSESTT00000038777		7	101081303	101082106
A5	ENSESTT00000038768		7	101119629	101231763
A5	ENSESTT00000038771		7	101273798	101400637
A5	ENSESTT00000038770		7	101273798	101485396
A5	ENSESTT00000038769		7	101273798	101487431
A5	ENSESTT00000038772		7	101362019	101397352
A5	OTTHUMT00007006649	mbhmh_gw729093.			

TABLE 3 (Continued)

	100322718.100376677	.3.8e-	7	101400541	101405344
A5	ENSESTT00000038778		7	101400655	101404987
A5	OTTHUMT00007007070	mbhmh_H_RG313A17_F193468.fgenesh2.2	7	101429721	101452503
A5	OTTHUMT00007007797	Hs_7_c1557	7	101468176	101468461
A5	ENSESTT00000038775		7	101477627	101484340
A5	ENSESTT00000038774		7	101477627	101485396
A5	ENSESTT00000038773		7	101477627	101487431
A5	ENSESTT00000038776		7	101486181	101487431
A5	ENSESTT00000038779		7	101488534	101512349
A5	OTTHUMT00007006892	mbax_h_100048510_100795952_m_134702119_1	7	101498891	101522278
A5	ENST00000306803	NM_020979	7	101504016	101522278
A5	ENSESTT00000038780		7	101517823	101522351
A5	OTTHUMT00007007831	Hs_7_c1560	7	101527852	101530126
A5	OTTHUMT00007007835	Hs_7_c1561	7	101537904	101547742
A5	OTTHUMT00007006950	mbhmh_ts.101.008.a	7	101547738	101553959
A5	ENST00000331921		7	101548723	101555503
A5	ENST00000332533		7	101551346	101554016
A5	ENSESTT00000038782		7	101564512	101576836
A5	ENSESTT00000038781		7	101564512	101581544
A5	ENSESTT00000038783		7	101564790	101581544
A5	OTTHUMT00007007838	Hs_7_c1564	7	101564796	101586300
A5	ENSESTT00000038785		7	101566265	101576836
A5	ENSESTT00000038784		7	101566265	101581544
A5	ENST00000329536		7	101576257	101576794
A5	OTTHUMT00007007842	Hs_7_c1565	7	101581374	101583647
A5	ENST00000262936	PRKRIP1	7	101597276	101627593

TABLE 3 (Continued)

A5	ENSESTT00000038786		7	101597306	101626253
A5	ENST00000292563	C7orf19	7	101634483	101649629
A5	OTTHUMT00007006331	CBCIP2	7	101634489	101649629
A5	ENSESTT00000038787		7	101634512	101647966
A5	ENSESTT00000038788		7	101637128	101647966
A5	OTTHUMT00007006536	FLJ20013	7	101657151	101665754
A5	ENST00000292566	NM_017621	7	101657178	101665774
A5	ENSESTT00000038837		7	101658436	101665789
A5	OTTHUMT00007006660	mbhmh_nh_h_100048510_100795952_m_1347021	7	101665582	101673962
A5	ENST00000292616	NM_152892	7	101665847	101673962
A5	ENSESTT00000038789		7	101665866	101669568
A5	ENSESTT00000038790		7	101670502	101675765
A5	ENSESTT00000038791		7	101670502	101675765
A5	ENSESTT00000038802		7	101674085	101770880
A5	ENSESTT00000038803		7	101674197	101679846
A5	OTTHUMT00007006868	POLR2J	7	101674370	101679823
A5	ENSESTT00000038807		7	101674370	101869945
A5	ENST00000292614	POLR2J	7	101674562	101679773
A5	ENST00000326391		7	101675112	101679773
A5	ENSESTT00000038806		7	101675384	101872600
A5	OTTHUMT00007006642	HSPC047.1	7	101680646	101681562
A5	ENSESTT00000038818		7	101684052	101884280
A5	ENSESTT00000038815		7	101684387	101887718
A5	ENSESTT00000038813		7	101684414	101889940
A5	ENST00000306682	NM_006989	7	101684505	101718623
A5	OTTHUMT00007006603	mbhmh_gw5901958.100606911.100642795.1.6e	7	101684508	101718623
A5	ENSESTT00000038814		7	101685947	101889940

TABLE 3 (Continued)

A5	ENSESTT00000038819		7	101685981	101793412
A5	ENSESTT00000038831		7	101691969	101794030
A5	ENSESTT00000038792		7	101694343	101794786
A5	ENSESTT00000038793		7	101694383	101794951
A5	ENSESTT00000038795		7	101694776	101695508
A5	ENSESTT00000038829		7	101697050	101702049
A5	ENSESTT00000038828		7	101697479	101707749
A5	ENSESTT00000038826		7	101697813	101801370
A5	ENSESTT00000038821		7	101710309	101817727
A5	ENSESTT00000038822		7	101713854	101813329
A5	ENSESTT00000038820		7	101724207	101823338
A5	ENSESTT00000038810		7	101739241	101839744
A5	ENSESTT00000038808		7	101739246	101866719
A5	ENSESTT00000038809		7	101739290	101866719
A5	ENST00000297278		7	101739330	101744501
A5	ENSESTT00000038804		7	101742184	101872640
A5	OTTHUMT00007007119	POLR2J2	7	101742452	101773584
A5	ENST00000319405		7	101755410	101861246
A5	OTTHUMT00007006426	mbhmh_H_RG158017_F218045.fgenesh2.3	7	101757047	101763166
A5	OTTHUMT00007008004	Hs_7_c5034	7	101763162	101768147
A5	ENSESTT00000038796		7	101766314	101869984
A5	ENSESTT00000038811		7	101768689	101773566
A5	ENST00000323465	NM_145325	7	101768862	101773534
A5	OTTHUMT00007006643	HSPC047.2	7	101774402	101780795
A5	ENSESTT00000038817		7	101783624	101884523
A5	ENSESTT00000038816		7	101783749	101884558
A5	ENST00000262940	RSG5_HUMAN	7	101783754	101817670
A5	OTTHUMT00007006268	CAPRI	7	101783754	101817670
A5	ENSESTT00000038797		7	101793580	101890696

TABLE 3 (Continued)

A5	ENSESTT00000038794		7	101794005	101794745
A5	ENSESTT00000038827		7	101796283	101801278
A5	ENSESTT00000038825		7	101796715	101806980
A5	OTTHUMT00007006314	mbhmh_gw12844788.100760681.100765918.2.7	7	101838509	101841746
A5	OTTHUMT00007007045	mbhmh_ts.101.018.a	7	101853330	101862231
A5	ENST00000312297		7	101855961	101858620
A5	OTTHUMT00007008008	Hs_7_c5035	7	101862227	101867194
A5	ENSESTT00000038805		7	101867736	101872630
A5	OTTHUMT00007006195	mbhmh_h_100048510_100795952_m_134702119_	7	101867909	101872582
A5	OTTHUMT00007007904	Hs_7_c1585	7	101879466	101879837
A5	OTTHUMT00007007905	Hs_7_c1586	7	101882816	101891453
A5	ENST00000329942	Q96C79	7	101889904	101890065
A5	ENSESTT00000038798		7	101889915	101890655
A5	OTTHUMT00007007907	Hs_7_c1587	7	101904290	101904451
A5	ENSESTT00000038812		7	101904439	101949674
A5	ENSESTT00000038799		7	101949942	101962382
A5	ENSESTT00000038800		7	101949949	101988333
A5	ENST00000314526	NM_147194	7	101950186	101950617
A5	ENST00000314157		7	101956102	101956916
A5	OTTHUMT00007007908	Hs_7_c1588	7	101956129	101956907
A5	OTTHUMT00007006547	mbhmh_h_100815628_101274767_m_19823891_2	7	101960818	101982855
A5	ENSESTT00000038801		7	101988311	102009612
A5	OTTHUMT00007007909	Hs_7_c1589	7	102000041	102007712
A5	OTTHUMT00007006171	MGC21636	7	102014212	102174163

TABLE 3 (Continued)

A5	ENST00000313221	NM_145032	7	102014214	102230396
A5	ENST00000313196	Q8N1P0	7	102014320	102228534
A5	ENSESTT00000040069		7	102113941	102146070
A5	ENST00000249377	LRRC17	7	102113983	102145927
A5	OTTHUMT00007006209	P37NB	7	102113983	102145927
A5	ENSESTT00000040175		7	102127277	102174180
A5	ENSESTT00000040070		7	102140423	102146070
A5	ENST00000335370	Q86UQ8	7	102174535	102177193
A5	ENSESTT00000040174		7	102226175	102275821
A5	OTTHUMT00007007936	Hs_7_c1593	7	102270250	102270369
A5	ENSESTT00000040076		7	102276116	102288294
A5	ENSESTT00000040075		7	102276116	102299941
A5	OTTHUMT00007006404	MGC3195	7	102276139	102299655
A5	ENST00000323716	NM_031905	7	102276251	102299531
A5	ENST00000306450	Q8IZC1	7	102276251	102299531
A5	ENST00000323735	Q8IZC2	7	102276251	102299531
A5	ENSESTT00000040171		7	102303502	102321207
A5	ENSESTT00000040170		7	102303502	102329508
A5	ENSESTT00000040173		7	102304193	102316319
A5	ENSESTT00000040172		7	102304334	102320671
A5	OTTHUMT00007006927	mbhmh_h_100815628_101274767_m_19823891_2	7	102307967	102331431
A5	ENST00000292634		7	102316038	102321120
A5	OTTHUMT00007007937	Hs_7_c1596	7	102342330	102342917
A5	ENST00000327597		7	102342504	102342917
A5	ENST00000333351		7	102353043	102353323
A5	OTTHUMT00007007938	Hs_7_c1597	7	102353043	102353323
A5	ENSESTT00000040163		7	102376120	102396451
A5	ENSESTT00000040164		7	102376238	102386518

TABLE 3 (Continued)

A5	ENSESTT00000040161		7	102376238	102411289
A5	OTTHUMT00007007939	Hs_7_c1598	7	102376305	102481130
A5	ENST00000306389	NM_182634	7	102398168	102444053
A5	ENSESTT00000040162		7	102398194	102399966
A5	ENSESTT00000040160		7	102399052	102411365
A5	ENST00000257741	S100A11P	7	102462978	102463286
A5	OTTHUMT00007006524	S100A14	7	102462978	102463286
A5	ENSESTT00000040158		7	102478355	102481237
A5	ENST00000320297	Q8N7T0	7	102478580	102481130
A5	ENSESTT00000040082		7	102498413	102511457
A5	OTTHUMT00007006222	PMPCB	7	102498424	102513390
A5	ENST00000249269	PMPCB	7	102498438	102513249
A5	ENSESTT00000040083		7	102504818	102511457
A5	ENSESTT00000040095		7	102513072	102513736
A5	OTTHUMT00007006445	mpp11	7	102513452	102545644
A5	ENSESTT00000040149		7	102513455	102520658
A5	ENSESTT00000040147		7	102513455	102520824
A5	ENSESTT00000040145		7	102513455	102528369
A5	ENSESTT00000040141		7	102513455	102528679
A5	ENSESTT00000040142		7	102513455	102528679
A5	ENSESTT00000040133		7	102513455	102545745
A5	ENSESTT00000040134		7	102513455	102545745
A5	ENSESTT00000040135		7	102513455	102545745
A5	ENSESTT00000040136		7	102513455	102545745
A5	ENSESTT00000040129		7	102513455	102545791
A5	ENSESTT00000040130		7	102513455	102545791
A5	ENSESTT00000040151		7	102513480	102514323
A5	ENSESTT00000040150		7	102513495	102517068
A5	ENST00000249270	ZRF1	7	102513500	102545600
A5	ENST00000222539	Q9BVX1	7	102513547	102523062

TABLE 3 (Continued)

A5	ENSESTT00000040148		7	102516740	102520824
A5	ENSESTT00000040146		7	102517478	102528369
A5	ENSESTT00000040143		7	102517478	102528679
A5	ENSESTT00000040144		7	102517478	102528679
A5	ENSESTT00000040137		7	102517478	102545745
A5	ENSESTT00000040138		7	102517478	102545745
A5	ENSESTT00000040139		7	102517478	102545745
A5	ENSESTT00000040140		7	102517478	102545745
A5	ENSESTT00000040131		7	102517478	102545791
A5	ENSESTT00000040132		7	102517478	102545791
A5	ENSESTT00000040096		7	102548636	102563744
A5	ENSESTT00000040097		7	102548652	102569791
A5	ENSESTT00000040098		7	102548654	102569791
A5	OTTHUMT00007006130	PSMC2	7	102548658	102569187
A5	ENSESTT00000040100		7	102548673	102565286
A5	ENSESTT00000040099		7	102548673	102569791
A5	ENSESTT00000040101		7	102548684	102565286
A5	ENST00000292644	PSMC2	7	102548690	102569032
A5	OTTHUMT00007007711	Hs_7_c1604	7	102549579	102549746
A5	ENSESTT00000040103		7	102556671	102565286
A5	ENSESTT00000040104		7	102556671	102565286
A5	ENSESTT00000040102		7	102556671	102569791
A5	ENSESTT00000040106		7	102562512	102565286
A5	ENSESTT00000040105		7	102562512	102569791
A5	OTTHUMT00007007089	mbhmh_h_101446068 _102346067_m _20202649_2	7	102575377	102600632
A5	ENST00000306312	PRES_HUMAN	7	102575377	102622492
A5	OTTHUMT00007007256	RELN	7	102672768	103190494
A5	ENSESTT00000040126		7	102673292	102684682

TABLE 3 (Continued)

A5	ENSESTT00000040125		7	102684757	102690743
A5	ENSESTT00000040124		7	102691660	102698900
A5	ENSESTT00000040123		7	102699088	102716370
A5	ENSESTT00000040122		7	102721238	102741291
A5	ENSESTT00000040121		7	102743823	102746233
A5	ENSESTT00000040120		7	102795307	102812764
A5	ENSESTT00000040118		7	102828853	102831012
A5	ENSESTT00000040117		7	102836540	102853738
A5	ENSESTT00000040114		7	102898905	102924166
A5	OTTHUMT00007006419	PRO1598	7	103134831	103136533
A5	ENST00000314952	NM_018503	7	103135443	103135619
A5	ENSESTT00000070876		7	103327319	103337875
A5	OTTHUMT00007006177	ORC5L	7	103327321	103408971
A5	ENST00000297431	ORC5L	7	103327826	103408883
A5	ENSESTT00000070875		7	103368963	103389283
A5	OTTHUMT00007007749	Hs_7_c1615	7	103380669	103381272
A5	OTTHUMT00007006936	mbhmh_h_102246067_103146066_m_21002648_2	7	103529801	103714756
A5	ENSESTT00000070872		7	103529849	104107212
A5	ENST00000330383		7	103868727	103869859
A5	OTTHUMT00007007754	Hs_7_c1617	7	103868727	103870551
A5	ENSESTT00000070874		7	103868774	103870161
A5	OTTHUMT00007007536	Hs_7_c3016	7	103871565	103871676
A5	OTTHUMT00007007047	mbhmh_h_102246067_103146066_m_21002648_2	7	103887281	103938199
A5	ENSESTT00000070873		7	103939577	103945127
A5	OTTHUMT00007006239	nh_nm_gi16307605	7	103997484	104005062
A5	OTTHUMT00007007758	Hs_7_c1619	7	104027314	104027771

TABLE 3 (Continued)

A5	ENSESTT00000041852			7	104142399	104163317
A5	OTTHUMT00007007780	Hs_7_c1620		7	104191028	104191180
A5	ENSESTT00000041867			7	104215182	104242044
A5	ENSESTT00000041866			7	104215182	104263257
A5	ENSESTT00000041864			7	104215182	104265008
A5	ENSESTT00000041865			7	104215182	104265008
A5	ENSESTT00000041862			7	104215182	104275754
A5	ENSESTT00000041863			7	104215182	104275754
A5	ENST00000311117	MLL5		7	104215186	104314311
A5	ENSESTT00000041854			7	104215192	104242044
A5	ENSESTT00000041853			7	104215192	104263257
A5	ENSESTT00000041868			7	104215192	104275754
A5	ENSESTT00000041855			7	104215403	104275754
A5	OTTHUMT00007006515	MLL5		7	104241847	104302458
A5	ENST00000257745		O95038	7	104241931	104301566
A5	ENST00000333597		Q8IWR5	7	104241931	104314311
A5	ENSESTT00000041857			7	104264328	104303627
A5	ENSESTT00000041856			7	104264328	104307572
A5	ENST00000222422		Q9NS29	7	104264368	104291189
A5	ENSESTT00000041858			7	104267501	104275739
A5	ENSESTT00000041859			7	104278279	104291101
A5	ENST00000334914		Q86W16	7	104278380	104290339
A5	ENSESTT00000041860			7	104279822	104291098
A5	ENSESTT00000041861			7	104302560	104307572
A5	ENST00000249297		Q86W12	7	104302864	104308193
A5	ENSESTT00000041870			7	104307682	104310494
A5	ENSESTT00000041869			7	104307682	104313681
A5	OTTHUMT00007007782		Hs_7_c1623	7	104308132	104313327
A5	ENSESTT00000041872			7	104308136	104310494
A5	ENSESTT00000041871			7	104308136	104313681

TABLE 3 (Continued)

A5	ENSESTT00000041873		7	104308939	104313681
A5	ENST00000334884	Q86TI3	7	104310018	104311845
A5	ENSESTT00000041909		7	104311672	104318457
A5	ENST00000334877	Q86WG0	7	104312977	104314348
A5	OTTHUMT00007006319	SRPK2	7	104317346	104469993
A5	ENST00000257701	SRPK2	7	104317350	104470008
A5	ENSESTT00000041904		7	104318221	104470012
A5	ENSESTT00000041900		7	104318221	104589682
A5	ENSESTT00000041896		7	104318221	104589703
A5	ENSESTT00000041910		7	104318221	104589839
A5	ENSESTT00000041908		7	104318327	104404634
A5	ENSESTT00000041905		7	104318558	104470012
A5	ENSESTT00000041901		7	104318558	104589682
A5	ENSESTT00000041897		7	104318558	104589703
A5	ENSESTT00000041911		7	104318558	104589839
A5	ENSESTT00000041906		7	104346254	104470012
A5	ENSESTT00000041902		7	104346254	104589682
A5	ENSESTT00000041898		7	104346254	104589703
A5	ENSESTT00000041894		7	104346254	104589839
A5	ENSESTT00000041907		7	104361279	104470012
A5	ENSESTT00000041903		7	104361279	104589682
A5	ENSESTT00000041899		7	104361279	104589703
A5	ENSESTT00000041895		7	104361279	104589839
A5	OTTHUMT00007007787	Hs_7_c1625	7	104390180	104390804
A5	OTTHUMT00007007788	Hs_7_c1626	7	104405611	104405835
A5	OTTHUMT00007007791	Hs_7_c1627	7	104445633	104445945
A5	OTTHUMT00007007792	Hs_7_c1628	7	104502500	104503061
A5	OTTHUMT00007007794	Hs_7_c1629	7	104555221	104555496
A5	ENST00000257687	NM_019042	7	104657493	104709424
A5	ENSESTT00000041893		7	104658206	104660239

TABLE 3 (Continued)

A5	ENSESTT00000041892		7	104658241	104707036
A5	OTTHUMT00007006894	FLJ20485	7	104658637	104723192
A5	ENSESTT00000041890		7	104683290	104723218
A5	ENSESTT00000041891		7	104706926	104723218
A5	ENST00000320648		7	104731187	104731649
A5	ENSESTT00000041876		7	104733157	104743633
A5	ENSESTT00000041875		7	104733157	104764927
A5	ENSESTT00000041874		7	104733157	104766577
A5	ENST00000257700	NM_021930	7	104733207	104768660
A5	ENSESTT00000041877		7	104743218	104747974
A5	OTTHUMT00007006406	FLJ11785	7	104751134	104768660
A5	ENSESTT00000041887		7	104766086	104770452
A5	ENSESTT00000041888		7	104766102	104770414
A5	ENSESTT00000041886		7	104766102	104770466
A5	ENSESTT00000041889		7	104766110	104770281
A5	ENSESTT00000041885		7	104768394	104782425
A5	ENSESTT00000041884		7	104768394	104782668
A5	ENST00000327788		7	104768432	104782432
A5	ENST00000310149		7	104783163	104784060
A5	ENST00000329090		7	104783236	104784089
A5	ENST00000332220		7	104783236	104784134
A5	OTTHUMT00007007834	Hs_7_c1634	7	104783239	104784179
A5	OTTHUMT00007006590	mbhmh_h_103713457_104613456_m_26903715_2	7	104792229	104844029
A5	ENSESTT00000041883		7	104808623	104811530
A5	ENST00000297416	YC18_HUMAN	7	104808830	105077559
A5	ENST00000275664	Q9BTQ8	7	104814454	104825244
A5	ENSESTT00000041880		7	104815496	104893101
A5	ENSESTT00000041878		7	104816938	104818834

TABLE 3 (Continued)

A5	ENSESTT00000041881		7	104818847	104893101
A5	ENSESTT00000041882		7	104821070	104893101
A5	ENSESTT00000041879		7	104961923	105077563
A5	ENST00000318724	NM_152749	7	104962355	105077535
A5	OTTHUMT00007007007	mbhmh_nh_h_103713457_104613456_m_2690371	7	104989335	104993681
A5	OTTHUMT00007007837	Hs_7_c1637	7	105020472	105021075
A5	ENST00000329846		7	105020547	105021078
A5	ENSESTT00000035755		7	105076067	105077551
A5	OTTHUMT00007007841	Hs_7_c1638	7	105076766	105083558
A5	OTTHUMT00007006283	mbhmh_h_103713457_104613456_m_26103716_2	7	105095260	105151278
A5	OTTHUMT00007006180	mbhmh_H_DJ0568B10_F020305.fgenesh2.1	7	105175823	105223819
A5	ENSESTT00000035734		7	105181971	105197312
A5	ENSESTT00000035735		7	105202525	105205801
A5	ENST00000317716	NM_152750	7	105205474	105231797
A5	ENSESTT00000035736		7	105205482	105221463
A5	OTTHUMT00007006497	mbhmh_nh_h_103713457_104613456_m_2690371	7	105224488	105232430
A5	ENSESTT00000035737		7	105229534	105234760
A5	OTTHUMT00007006260	SYPL	7	105291482	105313528
A5	ENST00000011473	SYPL	7	105291489	105313588
A5	ENSESTT00000035754		7	105292251	105294130
A5	ENSESTT00000035753		7	105292251	105298877
A5	ENSESTT00000035750		7	105292251	105313289
A5	ENSESTT00000035752		7	105292673	105300262

TABLE 3 (Continued)

A5	ENSESTT00000035751		7	105300133	105313289
A5	OTTHUMT00007007872	Hs_7_c1643	7	105326309	105327674
A5	OTTHUMT00007006155	PBEF	7	105451187	105485888
A5	ENSESTT00000035747		7	105451529	105470301
A5	ENSESTT00000035746		7	105451529	105471257
A5	ENSESTT00000035745		7	105451529	105476028
A5	ENSESTT00000035740		7	105451529	105486169
A5	ENSESTT00000035741		7	105451529	105486169
A5	ENSESTT00000035738		7	105451529	105486589
A5	ENSESTT00000035749		7	105452034	105454595
A5	ENST00000222553	PBEF_HUMAN	7	105452060	105485898
A5	ENSESTT00000035748		7	105462192	105464474
A5	ENSESTT00000035744		7	105469472	105485522
A5	ENSESTT00000035742		7	105473329	105486169
A5	ENSESTT00000035743		7	105473329	105486169
A5	ENSESTT00000035739		7	105473329	105486589
A5	OTTHUMT00007007874	Hs_7_c1646	7	105516202	105516577
A5	OTTHUMT00007007875	Hs_7_c1647	7	105831822	105832343
A5	OTTHUMT00007007586	Hs_7_c3104	7	105832534	105833055
A5	OTTHUMT00007006262	mbxx_nh_chr7.105.006.a	7	105833369	105833704
A5	ENST00000315965	NM_175884	7	105861166	105861861
A5	OTTHUMT00007007876	Hs_7_c1648	7	105861484	105861765
A6	ENSESTT00000021279		10	73471701	73512400
A6	ENST00000311182	CBARA1	10	73471701	73730468
A6	ENSESTT00000021278		10	73472141	73579660
A6	ENSESTT00000021277		10	73581559	73730469
A6	ENSESTT00000021276		10	73637423	73730476
A6	ENSESTT00000021271		10	73668375	73670920
A6	ENST00000313314	NM_138357	10	73796492	73992053

TABLE 3 (Continued)

A6	ENST00000286508	Q96FL3	10	73796537	73990183
A6	ENSESTT00000021273		10	73797084	73988744
A6	ENSESTT00000021272		10	73797084	73992055
A6	ENSESTT00000021275		10	73964348	73988744
A6	ENSESTT00000021274		10	73964348	73992055
A6	ENST00000260885	NM_152635	10	73997942	74037390
A6	ENST00000334011	Q8WWZ8	10	73998160	74036885
A6	ENSESTT00000021456		10	74016118	74028872
A6	ENSESTT00000021457		10	74034940	74046965
A6	ENSESTT00000021528		10	74039868	74058975
A6	ENST00000260878	PLA2G13	10	74039978	74059139
A6	ENST00000332968		10	74110192	74110956
A6	ENST00000263556	P4HA1	10	74112583	74179244
A6	ENST00000307116	P4HA1	10	74112583	74179244
A6	ENSESTT00000021526		10	74118611	74155608
A6	ENSESTT00000021527		10	74121207	74155454
A6	ENSESTT00000021525		10	74157783	74201227
A6	ENST00000299408	NUDT13	10	74214816	74236183
A6	ENSESTT00000021458		10	74214883	74236720
A6	ENST00000335635	Q9Y3X2	10	74226553	74235264
A6	ENST00000325946	NUDT13	10	74229464	74229628
A6	ENST00000263565	SGT1_HUMAN	10	74238886	74272420
A6	ENSESTT00000021521		10	74243730	74272456
A6	ENSESTT00000021522		10	74258724	74272456
A6	ENSESTT00000021524		10	74260633	74272402
A6	ENSESTT00000021523		10	74260633	74272456
A6	ENST00000242505	Q9Y2I0	10	74279052	74346541
A6	ENSESTT00000021459		10	74332501	74340393
A6	ENSESTT00000021460		10	74332502	74345507
A6	ENSESTT00000021461		10	74334657	74340393

TABLE 3 (Continued)

A6	ENSESTT00000021463		10	74338355	74338793
A6	ENSESTT00000021462		10	74339356	74345515
A6	ENST00000299416	DNAJC9	10	74347761	74351550
A6	ENST00000299418	MRPS16	10	74353204	74357012
A6	ENSESTT00000021464		10	74353210	74355109
A6	ENSESTT00000021465		10	74357530	74358710
A6	ENSESTT00000021466		10	74357561	74358710
A6	ENSESTT00000021520		10	74358121	74379898
A6	ENST00000310715	NM_145170	10	74358127	74463115
A6	ENST00000286530	Q8N7D5	10	74358336	74397767
A6	ENST00000277916	ANXA7	10	74479811	74518414
A6	ENST00000260852	ANXA7	10	74480456	74505217
A6	ENSESTT00000021505		10	74484518	74518436
A6	ENSESTT00000021506		10	74484518	74518436
A6	ENSESTT00000021507		10	74484518	74518436
A6	ENSESTT00000021467		10	74485833	74487824
A6	ENSESTT00000021517		10	74487551	74518431
A6	ENSESTT00000021508		10	74487551	74518436
A6	ENSESTT00000021509		10	74487551	74518436
A6	ENSESTT00000021518		10	74487935	74518431
A6	ENSESTT00000021510		10	74487935	74518436
A6	ENSESTT00000021511		10	74487935	74518436
A6	ENSESTT00000021512		10	74487935	74518436
A6	ENSESTT00000021513		10	74487935	74518436
A6	ENSESTT00000021514		10	74487935	74518436
A6	ENSESTT00000021519		10	74487963	74518419
A6	ENSESTT00000021515		10	74487976	74518436
A6	ENSESTT00000021516		10	74492701	74518436
A6	ENST00000299432	ZMYND17	10	74528914	74537973
A6	ENST00000265920	PPP3CB	10	74541167	74600362

TABLE 3 (Continued)

A6	ENSESTT00000021500		10	74542284	74575867
A6	ENSESTT00000021501		10	74542284	74575867
A6	ENSESTT00000021502		10	74542546	74575867
A6	ENSESTT00000021504		10	74542559	74571979
A6	ENST00000320361	Q8N3W4	10	74542603	74600250
A6	ENSESTT00000021503		10	74548717	74575867
A6	ENSESTT00000021499		10	74579279	74600362
A6	ENSESTT00000021468		10	74600104	74601061
A6	ENST00000319786	NM_152586	10	74601901	74621672
A6	ENSESTT00000021469		10	74634518	74635149
A6	ENST00000318330	MYOZ1	10	74736016	74746118
A6	ENST00000332382		10	74736345	74742281
A6	ENST00000299404	NM_024875	10	74749893	74755390
A6	ENST00000310381		10	74778960	74802116
A6	ENSESTT00000021498		10	74787103	74799146
A6	ENSESTT00000021470		10	74834923	74835765
A6	ENST00000333366		10	74836264	74838018
A6	ENST00000332341		10	74836264	74838018
A6	ENSESTT00000021472		10	74848734	74869952
A6	ENSESTT00000021471		10	74848734	74875148
A6	ENSESTT00000021473		10	74848778	74856191
A6	ENST00000313749	SEC24C	10	74851194	74875548
A6	ENSESTT00000021474		10	74870160	74875148
A6	ENSESTT00000021475		10	74872779	74875148
A6	ENSESTT00000021476		10	74873363	74874530
A6	ENST00000326248	NM_173540	10	74876477	74880577
A6	ENST00000299593	Q96CJ6	10	74876947	74877339
A6	ENSESTT00000021478		10	74877622	74880515
A6	ENSESTT00000021477		10	74877622	74883436
A6	ENSESTT00000021479		10	74886411	74888015

TABLE 3 (Continued)

A6	ENST00000310182	Q96BP2	10	74886424	74887727
A6	ENSESTT00000021480		10	74886683	74888015
A6	ENST00000326185	Q8NB34	10	74890240	74890617
A6	ENSESTT00000021481		10	74893032	74894348
A6	ENSESTT00000021482		10	74893456	74894353
A6	ENSESTT00000021483		10	74893863	74894617
A6	ENST00000242558	O94987	10	74894547	74903962
A6	ENSESTT00000021484		10	74895484	74896595
A6	ENSESTT00000021485		10	74897161	74898597
A6	ENST00000310153	Q9H8F3	10	74897187	74906153
A6	ENSESTT00000021486		10	74900732	74903751
A6	ENSESTT00000021487		10	74900875	74903751
A6	ENSESTT00000021488		10	74904375	74906153
A6	ENST00000325890	Q8N420	10	74904393	74905880
A6	ENSESTT00000021489		10	74905268	74906153
A6	ENST00000299641	NDST2	10	74906812	74913092
A6	ENST00000309979	Q8WV68	10	74915239	74916144
A6	ENST00000309967		10	74916017	74916304
A6	ENST00000322680	CAMK2G	10	74916862	74978941
A6	ENST00000305762	Q8NIA4	10	74919376	74977443
A6	ENST00000322635	NM_172169	10	74919376	74978822
A6	ENST00000277853	NM_001222	10	74919376	74978822
A6	ENSESTT00000021493		10	74919386	74978883
A6	ENSESTT00000021490		10	74919386	74978935
A6	ENSESTT00000021497		10	74919578	74951712
A6	ENSESTT00000021495		10	74921388	74978836
A6	ENSESTT00000021494		10	74921388	74978883
A6	ENSESTT00000021491		10	74921388	74978935
A6	ENSESTT00000021496		10	74921432	74952651
A6	ENSESTT00000021492		10	74953412	74978891

TABLE 3 (Continued)

A6	ENSESTT00000021181		10	75013538	75019592
A6	ENSESTT00000021180		10	75013538	75019765
A6	ENSESTT00000021179		10	75013538	75021858
A6	ENST00000317358	Q8NAK4	10	75014337	75016591
A6	ENSESTT00000021174		10	75015493	75019592
A6	ENSESTT00000021183		10	75015493	75019765
A6	ENSESTT00000021182		10	75015493	75021858
A6	ENST00000242464	PLAU	10	75015909	75020926
A6	ENSESTT00000021176		10	75016395	75019765
A6	ENSESTT00000021175		10	75016395	75021858
A6	ENSESTT00000021178		10	75017648	75019765
A6	ENSESTT00000021177		10	75017648	75021858
A6	ENSESTT00000021185		10	75102475	75175189
A6	ENSESTT00000021184		10	75102475	75177160
A6	ENSESTT00000021186		10	75102477	75168197
A6	ENST00000277829	NM_003373	10	75102569	75222530
A6	ENST00000211998	VCL	10	75102569	75224513
A6	ENSESTT00000021187		10	75147443	75177116
A6	ENSESTT00000021189		10	75179224	75219023
A6	ENSESTT00000021188		10	75179224	75223339
A6	ENSESTT00000021209		10	75200527	75206788
A6	ENSESTT00000021191		10	75201559	75219023
A6	ENSESTT00000021190		10	75201559	75223339
A6	ENSESTT00000021192		10	75218050	75223339
A6	ENSESTT00000021193		10	75219116	75222883
A6	ENSESTT00000021208		10	75222927	75224394
A6	ENST00000330581	AP3M1	10	75226134	75255181
A6	ENSESTT00000021206		10	75227787	75255426
A6	ENST00000323546	NM_030970	10	75229527	75229598
A6	ENSESTT00000021207		10	75233235	75234365

TABLE 3 (Continued)

A6	ENSESTT00000021195		10	75255568	75632868
A6	ENSESTT00000021194		10	75255568	75813656
A6	ENSESTT00000021196		10	75255596	75328956
A6	ENST00000286621	ADK	10	75255640	75812806
A6	ENSESTT00000021199		10	75280904	75632868
A6	ENSESTT00000021198		10	75280904	75704867
A6	ENSESTT00000021197		10	75280904	75813656
A6	ENST00000330453		10	75527848	75528380
A6	ENST00000326278		10	75631945	75632449
A6	ENSESTT00000021205		10	75903848	75958752
A6	ENSESTT00000021201		10	75929925	75947950
A6	ENSESTT00000021200		10	75929925	76076904
A6	ENST00000287239	MYST4	10	75930980	76135407
A6	ENSESTT00000021203		10	75930982	75947950
A6	ENSESTT00000021202		10	75930982	76076904
A6	ENSESTT00000021204		10	75931001	75947270
A6	ENSESTT00000021123		10	76083627	76086278
A6	ENSESTT00000021143		10	76124157	76126508
A6	ENSESTT00000021142		10	76198793	76199990
A6	ENST00000308475		10	76198802	76213537
A6	ENSESTT00000021141		10	76198943	76200127
A6	ENSESTT00000021139		10	76202071	76213531
A6	ENSESTT00000021140		10	76208362	76213559
A6	ENST00000330673	Q96J67	10	76210030	76213518
A6	ENSESTT00000021124		10	76215992	76255437
A6	ENSESTT00000021138		10	76228974	76230298
A6	ENST00000287258	NM_144660	10	76254890	76280615
A6	ENSESTT00000021125		10	76280444	76281496
A6	ENSESTT00000021127		10	76314523	76322599
A6	ENSESTT00000021126		10	76314523	76335808

TABLE 3 (Continued)

A6	ENST00000298468	VDAC2	10	76315209	76335638
A6	ENSESTT00000021128		10	76315395	76335808
A6	ENST00000304595	VDAC2	10	76315945	76335465
A6	ENSESTT00000021129		10	76333671	76335638
A6	ENSESTT00000021136		10	76338330	76339540
A6	ENSESTT00000021137		10	76338332	76339540
A6	ENSESTT00000021135		10	76338332	76339908
A6	ENST00000298482	NM_144589	10	76338434	76340289
A6	ENSESTT00000021134		10	76340085	76340318
A6	ENST00000308111	NM_032772	10	76502522	76506032
A6	ENSESTT00000021133		10	76504121	76505779
A6	ENSESTT00000021130		10	76505464	76511780
A6	ENST00000321905		10	76507413	76512179
A6	ENSESTT00000021131		10	76508372	76511814
A6	ENST00000260908	Q9P1K6	10	76683657	76683884
A6	ENSESTT00000021132		10	76875127	77140490
A6	ENST00000277847	NM_032024	10	77140367	77163144
A6	ENSESTT00000021106		10	77387031	77389445
A6	ENSESTT00000021100		10	77428760	77661738
A6	ENSESTT00000021101		10	77463793	77661593
A6	ENSESTT00000021098		10	77507582	77661714
A6	ENSESTT00000021099		10	77569175	77661701
A6	ENSESTT00000021105		10	77981962	77992271
A6	ENST00000331566		10	77982100	77982255
A6	ENST00000286628	KCNMA1	10	77991627	78214698
A6	ENSESTT00000021104		10	77991650	78019414
A6	ENSESTT00000021102		10	77992403	78006633
A6	ENSESTT00000021103		10	77992437	78082885
A6	ENSESTT00000021145		10	78009186	78053824
A6	ENSESTT00000021172		10	78014424	78053629

TABLE 3 (Continued)

A6	ENSESTT00000021173		10	78018433	78049275
A6	ENSESTT00000021171		10	78053673	78116388
A6	ENSESTT00000021170		10	78078354	78123424
A6	ENSESTT00000021168		10	78099639	78143996
A6	ENSESTT00000021169		10	78116559	78143977
A6	ENSESTT00000021167		10	78177554	78212924
A6	ENSESTT00000021166		10	78189055	78287832
A6	ENSESTT00000021146		10	78204890	78205770
A6	ENSESTT00000021147		10	78252653	78254461
A6	ENSESTT00000021162		10	78287850	78742046
A6	ENSESTT00000021165		10	78686459	78723017
A6	ENSESTT00000021163		10	78740556	78741848
A6	ENSESTT00000021164		10	78740566	78741829
A6	ENST00000334073		10	78836952	78838490
A6	ENST00000320599		10	78884695	78886237
A6	ENST00000320511	DLG5	10	78895154	78961260
A6	ENSESTT00000021157		10	78896519	78910150
A6	ENSESTT00000021161		10	78896672	78898481
A6	ENSESTT00000021158		10	78896672	78910150
A6	ENSESTT00000021159		10	78898010	78910150
A6	ENSESTT00000021160		10	78899194	78910150
A6	ENSESTT00000021155		10	78911119	78913967
A6	ENSESTT00000021156		10	78911160	78912313
A6	ENSESTT00000021154		10	78915532	78916696
A6	ENSESTT00000021153		10	78920387	78923893
A6	ENSESTT00000021151		10	78925896	78935239
A6	ENSESTT00000021152		10	78925896	78935239
A6	ENSESTT00000021149		10	78925896	78946262
A6	ENSESTT00000021150		10	78925896	78946262
A6	ENSESTT00000021148		10	78948038	78958638

TABLE 3 (Continued)

A6	ENST00000318641		10	79032042	79032499
A6	ENST00000277783	RPC1_HUMAN	10	79080509	79133862
A6	ENSESTT00000021121		10	79081352	79090348
A6	ENSESTT00000021122		10	79086568	79089703
A6	ENSESTT00000021120		10	79104456	79128979
A6	ENSESTT00000021112		10	79138153	79141824
A6	ENSESTT00000021111		10	79138153	79141833
A6	ENSESTT00000021110		10	79138153	79144586
A6	ENSESTT00000021109		10	79138153	79145062
A6	ENSESTT00000021108		10	79138153	79153449
A6	ENST00000260896	RPS24	10	79138226	79145063
A6	ENSESTT00000021114		10	79139712	79145062
A6	ENSESTT00000021113		10	79139712	79159037
A6	ENST00000311407	Q9P1E1	10	79193716	79194732
A6	ENSESTT00000021115		10	79353170	79457696
A6	ENSESTT00000021116		10	79371686	79382425
A6	ENSESTT00000021117		10	79371802	79434851
A6	ENSESTT00000021118		10	79398200	79405363
A6	ENSESTT00000021119		10	79800422	79801382
A6	ENSESTT00000021253		10	80160384	80173420
A6	ENSESTT00000021230		10	80244085	80395502
A6	ENST00000334512	RAI17	10	80244114	80417109
A6	ENSESTT00000021231		10	80348029	80395502
A6	ENST00000277788	RAI17	10	80348029	80417109
A6	ENSESTT00000021232		10	80410611	80417213
A6	ENSESTT00000021233		10	80451828	80458345
A6	ENST00000225174	PPIF	10	80451837	80459684
A6	ENSESTT00000021234		10	80486687	80513633
A6	ENST00000298180	NM_153367	10	80486688	80549986
A6	ENSESTT00000021252		10	80498696	80549886

TABLE 3 (Continued)

A6	ENSESTT00000021251		10	80608432	80610640
A6	ENST00000329262		10	80617009	80617473
A6	ENST00000328784	SFTPA2	10	80661568	80663842
A6	ENSESTT00000021246		10	80661840	80664756
A6	ENSESTT00000021247		10	80661841	80664756
A6	ENSESTT00000021248		10	80661863	80664744
A6	ENSESTT00000021245		10	80663244	80984138
A6	ENST00000334432	SFTPA1	10	80715314	80718472
A6	ENST00000329658		10	80716284	80718472
A6	ENSESTT00000021235		10	80718201	81039562
A6	ENSESTT00000021237		10	80718531	81039746
A6	ENSESTT00000021238		10	80718764	81039731
A6	ENSESTT00000021241		10	80718926	80719667
A6	ENSESTT00000021239		10	80719112	81039731
A6	ENSESTT00000021240		10	80719228	81039731
A6	ENSESTT00000021236		10	80772270	81190839
A6	ENSESTT00000021250		10	80789921	80795955
A6	ENST00000241878	Q9H392	10	80852848	80853054
A6	ENSESTT00000021249		10	80928323	80930532
A6	ENST00000333539		10	80936971	80937273
A6	ENST00000242457	SFTPA2	10	80981513	80983787
A6	ENSESTT00000021242		10	80981785	80984701
A6	ENSESTT00000021243		10	80981786	80984701
A6	ENSESTT00000021244		10	80981808	80984689
A6	ENSESTT00000021401		10	81035257	81038146
A6	ENST00000242455	SFTPA1	10	81035260	81038418
A6	ENSESTT00000021402		10	81035266	81038139
A6	ENSESTT00000021403		10	81035780	81036737
A6	ENSESTT00000021455		10	81038872	81039613
A6	ENSESTT00000021404		10	81093936	81101184

TABLE 3 (Continued)

A6	ENSESTT00000021454		10	81110118	81116151
A6	ENSESTT00000021446		10	81116552	81250849
A6	ENST00000335456		10	81128338	81275386
A6	ENST00000334434	Q9H392	10	81173024	81173230
A6	ENSESTT00000021451		10	81190668	81230459
A6	ENSESTT00000021447		10	81190746	81250724
A6	ENSESTT00000021453		10	81202274	81202689
A6	ENSESTT00000021448		10	81226317	81250724
A6	ENSESTT00000021450		10	81228390	81238987
A6	ENSESTT00000021452		10	81228392	81230459
A6	ENSESTT00000021449		10	81228392	81250724
A6	ENST00000305740		10	81268629	81274246
A6	ENST00000298189	Q96LH7	10	81268792	81275205
A6	ENSESTT00000021445		10	81294428	81295438
A6	ENSESTT00000021405		10	81329237	81332141
A6	ENST00000312535		10	81344660	81347359
A6	ENSESTT00000021406		10	81346244	81347451
A6	ENSESTT00000021444		10	81362073	81373418
A6	ENSESTT00000021443		10	81362073	81373430
A6	ENST00000256035	SFTPD	10	81362085	81373438
A6	ENST00000302577		10	81456301	81456726
A6	ENSESTT00000021407		10	81503006	81516880
A6	ENSESTT00000021408		10	81503009	81516880
A6	ENST00000256052	NM_025125	10	81503033	81516880
A6	ENSESTT00000021409		10	81503580	81516880
A6	ENSESTT00000021410		10	81506036	81510774
A6	ENSESTT00000021411		10	81506170	81515572
A6	ENSESTT00000021412		10	81506477	81516880
A6	ENSESTT00000021442		10	81515319	81516192
A6	ENSESTT00000021413		10	81557063	81569687

TABLE 3 (Continued)

A6	ENSESTT00000021414		10	81566481	81568673
A6	ENSESTT00000021415		10	81568379	81569370
A6	ENSESTT00000021416		10	81579472	81582085
A6	ENSESTT00000021426		10	81579821	81582361
A6	ENSESTT00000021430		10	81579821	81583460
A6	ENSESTT00000021429		10	81579821	81587747
A6	ENSESTT00000021427		10	81579932	81590496
A6	ENST00000265447	ANXA11	10	81580186	81597194
A6	ENSESTT00000021428		10	81583422	81587941
A6	ENSESTT00000021440		10	81591229	81629900
A6	ENSESTT00000021441		10	81593529	81597204
A6	ENST00000316258		10	81671552	81672016
A6	ENST00000280867	MAT1A	10	81696158	81713756
A6	ENSESTT00000021439		10	81697070	81697478
A6	ENSESTT00000021438		10	81697983	81699025
A6	ENSESTT00000021437		10	81700853	81713692
A6	ENSESTT00000021435		10	81700889	81714017
A6	ENSESTT00000021436		10	81705012	81714017
A6	ENSESTT00000021433		10	81760462	81781086
A6	ENST00000302526	NM_138812	10	81762785	81776934
A6	ENSESTT00000021434		10	81762846	81781047
A6	ENSESTT00000021417		10	81781106	81787306
A6	ENST00000316132	NM_032372	10	81781135	81792406
A6	ENSESTT00000021418		10	81787282	81791494
A6	ENSESTT00000021419		10	81832162	81856971
A6	ENSESTT00000021420		10	81832829	81856971
A6	ENSESTT00000021421		10	81832918	81856971
A6	ENSESTT00000021422		10	81838176	81856971
A6	ENST00000241895	NM_032333	10	81838189	81856968
A6	ENST00000312169	Q9BU34	10	81913567	81942309

TABLE 3 (Continued)

A6	ENST00000316064	Q8N2P5	10	81913567	81945181
A6	ENST00000265450	NM_030927	10	81913567	81946237
A6	ENSESTT00000021423		10	81913573	81947518
A6	ENSESTT00000021432		10	81939416	81943437
A6	ENSESTT00000021424		10	81940535	81942599
A6	ENSESTT00000021425		10	81940630	81956185
A6	ENSESTT00000021431		10	81953930	81960275
A6	ENST00000329171		10	81959343	81959717
A6	ENST00000313455	Q8NB58	10	82067342	82068641
A6	ENSESTT00000021107		10	82074130	82078067
A7	OTTHUMT00007008148	Hs_7_c5082	7	71452603	71709685
A7	ENSESTT00000039973		7	71571787	71621457
A7	OTTHUMT00007007334	Hs_7_c1064	7	71599963	71600172
A7	ENST00000265301		7	71605907	71606016
A7	OTTHUMT00007007336	Hs_7_c1066	7	71645929	71646324
A7	ENSESTT00000039972		7	71654577	71698179
A7	ENSESTT00000039971		7	71689895	71710894
A7	ENSESTT00000039970		7	71709544	71710900
A7	ENSESTT00000039903		7	71712159	71716707
A7	ENSESTT00000039904		7	71712178	71714460
A7	OTTHUMT00007006933	LOC155370	7	71712203	71716703
A7	ENSESTT00000039905		7	71712367	71716710
A7	OTTHUMT00007007337	Hs_7_c1068	7	71746587	71753122
A7	ENSESTT00000039948		7	71746639	71904642
A7	OTTHUMT00007007338	Hs_7_c1069	7	71747922	71748002
A7	ENST00000323915		7	71749050	71751686
A7	ENSESTT00000039906		7	71762023	71773321
A7	ENSESTT00000039911		7	71762045	71763010
A7	ENSESTT00000039910		7	71762045	71822067
A7	ENSESTT00000039909		7	71762045	71822522

TABLE 3 (Continued)

A7	ENSESTT00000039908		7	71762045	72120515
A7	ENSESTT00000039907		7	71762045	72121873
A7	OTTHUMT00007006851	POM121	7	71762053	71834096
A7	ENST00000275580	O95746	7	71762053	71922346
A7	ENSESTT00000039912		7	71773689	71796697
A7	ENST00000257622	POM121	7	71809068	71828890
A7	ENSESTT00000039913		7	71823101	72121996
A7	ENSESTT00000039914		7	71823135	71830954
A7	ENSESTT00000039938		7	71830947	71831469
A7	ENSESTT00000039937		7	71830947	71831838
A7	ENSESTT00000039935		7	71830947	71831880
A7	ENSESTT00000039933		7	71830947	71831893
A7	ENSESTT00000039931		7	71830947	71833202
A7	ENSESTT00000039929		7	71830947	71837351
A7	ENSESTT00000039926		7	71830947	71837371
A7	ENSESTT00000039925		7	71830947	71837390
A7	ENSESTT00000039936		7	71830954	71831875
A7	ENSESTT00000039934		7	71830954	71831893
A7	ENSESTT00000039932		7	71830954	71833202
A7	ENSESTT00000039930		7	71830954	71837351
A7	ENSESTT00000039927		7	71830954	71837371
A7	OTTHUMT00007007028	WBSCR20A.1	7	71830955	71837376
A7	ENST00000330999	NM_148936	7	71831040	71832800
A7	ENST00000222857	NM_149379	7	71831040	71834307
A7	ENSESTT00000039923		7	71831952	72131287
A7	ENSESTT00000039928		7	71832127	71837371
A7	ENSESTT00000039924		7	71836013	71837392
A7	ENST00000285805	Q86UV6	7	71842133	71852114
A7	ENSESTT00000039939		7	71842201	71849602
A7	OTTHUMT00007006839	mfhmh_h_70400969			

TABLE 3 (Continued)

		_71300968_m _133605736_13	7	71842530	71848805
A7	ENSESTT00000039940		7	71848707	72154649
A7	ENSESTT00000039915		7	71851502	71854934
A7	ENST00000335315	Q8N4N6	7	71852127	71852366
A7	OTTHUMT00007007357	Hs_7_c1076	7	71852462	71854375
A7	OTTHUMT00007007220	DKFZP434A0131.3	7	71857195	71882155
A7	ENST00000305954	NM_018991	7	71857213	71882155
A7	ENSESTT00000039969		7	71876851	71877435
A7	ENSESTT00000039916		7	71877080	72107101
A7	ENSESTT00000039962		7	71880796	71888562
A7	ENSESTT00000039963		7	71880796	71888562
A7	ENSESTT00000039949		7	71880796	71888584
A7	ENSESTT00000039950		7	71880796	71888584
A7	ENSESTT00000039964		7	71881128	71888562
A7	ENSESTT00000039965		7	71881128	71888562
A7	ENSESTT00000039951		7	71881128	71888584
A7	ENSESTT00000039952		7	71881128	71888584
A7	ENSESTT00000039953		7	71881128	71888584
A7	ENSESTT00000039966		7	71881144	71888562
A7	ENSESTT00000039954		7	71881144	71888584
A7	ENSESTT00000039955		7	71881144	71888584
A7	ENSESTT00000039956		7	71881144	71888584
A7	ENSESTT00000039957		7	71881144	71888584
A7	ENSESTT00000039967		7	71881902	71888562
A7	ENSESTT00000039958		7	71881902	71888584
A7	ENSESTT00000039959		7	71881902	71888584
A7	ENSESTT00000039960		7	71882400	71888584
A7	ENSESTT00000039961		7	71882400	71888584
A7	ENSESTT00000039968		7	71882996	71888562

TABLE 3 (Continued)

A7	OTTHUMT00007007358	Hs_7_c1079	7	71888246	71931788
A7	ENSESTT00000039917		7	71888736	71922142
A7	ENSESTT00000039918		7	71888768	71932926
A7	ENSESTT00000039920		7	71888780	71904881
A7	ENSESTT00000039919		7	71888780	71932926
A7	OTTHUMT00007006363	mbhmh_gw1304124.71119255.71153128.3.2e-3	7	71892093	71895794
A7	ENSESTT00000039921		7	71894107	71932926
A7	ENST00000334824	Q86WY7	7	71902561	71908486
A7	ENSESTT00000039944		7	71903628	71905036
A7	ENSESTT00000039943		7	71904798	71932687
A7	ENSESTT00000039947		7	71908198	71909384
A7	ENSESTT00000039946		7	71910560	71912409
A7	ENSESTT00000039945		7	71918103	71919942
A7	ENST00000323689		7	71920032	71931791
A7	ENST00000306533	PMS2L5	7	71922114	71931791
A7	ENST00000335506	Q86WY7	7	71930603	71936531
A7	ENSESTT00000039942		7	71931673	71933081
A7	OTTHUMT00007006797	mfhmh_H_NH0396K03_F218045.fgenesh2.5	7	71931784	71940793
A7	ENSESTT00000039941		7	71936243	71937429
A7	ENSESTT00000039922		7	71981407	72009414
A7	OTTHUMT00007007381	Hs_7_c1083	7	72001548	72031575
A7	ENSESTT00000041207		7	72001575	72012822
A7	ENSESTT00000041210		7	72016228	72028278
A7	ENSESTT00000041209		7	72016228	72031964
A7	ENSESTT00000041208		7	72016228	72032675
A7	ENSESTT00000041225		7	72016228	72032723
A7	ENSESTT00000041224		7	72016228	72032724

TABLE 3 (Continued)

A7	ENSESTT00000041215		7	72017507	72028278
A7	ENSESTT00000041214		7	72017507	72031964
A7	ENSESTT00000041213		7	72017507	72032675
A7	ENSESTT00000041212		7	72017507	72032723
A7	ENSESTT00000041211		7	72017507	72032724
A7	ENSESTT00000041220		7	72018632	72028278
A7	ENSESTT00000041219		7	72018632	72031964
A7	ENSESTT00000041218		7	72018632	72032675
A7	ENSESTT00000041217		7	72018632	72032723
A7	ENSESTT00000041216		7	72018632	72032724
A7	ENSESTT00000041221		7	72020761	72028278
A7	ENSESTT00000041222		7	72028242	72032724
A7	ENSESTT00000041223		7	72029512	72032724
A7	ENSESTT00000041228		7	72046727	72056376
A7	ENSESTT00000041226		7	72046727	72062034
A7	ENSESTT00000041227		7	72046727	72062034
A7	OTTHUMT00007006731	NCF1.1	7	72046768	72062076
A7	ENSESTT00000041229		7	72046771	72056068
A7	ENST00000330925		7	72046778	72061921
A7	ENSESTT00000041230		7	72057999	72062076
A7	ENSESTT00000041231		7	72058029	72062076
A7	ENST00000297906		7	72069401	72070888
A7	ENSESTT00000041281		7	72077500	72079722
A7	OTTHUMT00007008151	Hs_7_c5085	7	72085452	72106243
A7	OTTHUMT00007006556	mbhmh_h_71200968 _72100967_m _133605736_13	7	72111678	72127258
A7	ENST00000308082		7	72119594	72129318
A7	OTTHUMT00007007030	WBSCR20A.2	7	72129323	72134901
A7	ENST00000310326	WBSCR20A	7	72129324	72134920

TABLE 3 (Continued)

A7	ENSESTT00000041279		7	72129920	72134917
A7	ENSESTT00000041278		7	72130393	72133598
A7	ENSESTT00000041280		7	72130841	72134862
A7	ENST00000333149	NM_178125	7	72138632	72154182
A7	OTTHUMT00007007384	Hs_7_c1089	7	72139056	72150837
A7	ENSESTT00000041277		7	72139434	72143038
A7	ENSESTT00000041276		7	72139434	72144953
A7	ENSESTT00000041275		7	72139434	72151653
A7	OTTHUMT00007007413	Hs_7_c1090	7	72140207	72141310
A7	ENST00000252037	FKBP6	7	72154529	72168994
A7	OTTHUMT00007006557	mbhmh_h_71200968_72100967_m_133605736_13	7	72154529	72168994
A7	ENSESTT00000041233		7	72156394	72184728
A7	ENSESTT00000041232		7	72156394	72184733
A7	ENSESTT00000041234		7	72157790	72168998
A7	OTTHUMT00007006375	FZD9	7	72260410	72262589
A7	ENST00000265756	BAZ1B	7	72266830	72348646
A7	OTTHUMT00007007171	BAZ1B	7	72266830	72348712
A7	ENSESTT00000041274		7	72268726	72273720
A7	ENSESTT00000041273		7	72277272	72303421
A7	ENSESTT00000041272		7	72304601	72348524
A7	ENSESTT00000041271		7	72304601	72348733
A7	ENSESTT00000041266		7	72362783	72383988
A7	ENST00000223368	BCL7B	7	72362783	72384121
A7	OTTHUMT00007006736	BCL7B	7	72362783	72384121
A7	ENSESTT00000041269		7	72363456	72383648
A7	ENSESTT00000041264		7	72363456	72384093
A7	ENSESTT00000041263		7	72363469	72384120
A7	ENSESTT00000041267		7	72363476	72383988

TABLE 3 (Continued)

A7	ENSESTT00000041270		7	72363528	72383646
A7	ENSESTT00000041268		7	72363620	72383668
A7	ENSESTT00000041265		7	72363620	72384016
A7	ENSESTT00000041262		7	72363722	72384156
A7	OTTHUMT00007006751	TBL2	7	72396096	72405069
A7	ENST00000275621	TBL2	7	72396099	72405018
A7	ENSESTT00000041260		7	72396857	72405034
A7	ENSESTT00000041261		7	72396857	72405034
A7	ENST00000305632	NM_032988	7	72403031	72404976
A7	ENST00000243720	WBSCR14	7	72419621	72450967
A7	OTTHUMT00007006613	WBSCR14	7	72419621	72450967
A7	ENSESTT00000041259		7	72420796	72422929
A7	ENST00000313375	WBSCR14	7	72422850	72450919
A7	ENSESTT00000041257		7	72424072	72450970
A7	ENSESTT00000041258		7	72433738	72450946
A7	OTTHUMT00007007252	mbhmh_h_71200968_72100967_m_133605736_13	7	72478242	72507686
A7	ENST00000324941	WBSCR24	7	72494272	72497803
A7	ENSESTT00000041235		7	72494282	72497608
A7	OTTHUMT00007006614	WBSCR18	7	72508698	72509869
A7	ENST00000324842	WBSCR18	7	72509170	72509850
A7	ENSESTT00000041236		7	72510028	72524583
A7	ENST00000265758	WBSCR22	7	72510034	72524313
A7	OTTHUMT00007006630	WBSCR22	7	72510034	72524639
A7	ENSESTT00000041237		7	72510055	72524583
A7	ENSESTT00000041238		7	72510072	72524583
A7	ENSESTT00000041239		7	72510232	72519061
A7	ENSESTT00000041240		7	72517339	72524579
A7	ENSESTT00000041241		7	72519822	72524424

TABLE 3 (Continued)

A7	ENSESTT00000041242		7	72520410	72524569
A7	ENST00000222812	STX1A	7	72525637	72546059
A7	OTTHUMT00007006498	STX1A	7	72525637	72546086
A7	ENSESTT00000041256		7	72526715	72530923
A7	ENSESTT00000041252		7	72526715	72546118
A7	ENSESTT00000041253		7	72526718	72546118
A7	ENSESTT00000041254		7	72530608	72546099
A7	ENSESTT00000041255		7	72531576	72546069
A7	OTTHUMT00007006628	WBSCR21	7	72562521	72565258
A7	ENST00000322862	NM_148914	7	72562544	72565281
A7	ENST00000222800	WBSCR21	7	72562986	72565224
A7	OTTHUMT00007006748	CLDN3	7	72595424	72596673
A7	ENST00000297926	CLDN3	7	72595814	72596476
A7	OTTHUMT00007006403	nh_nm_gi18182840	7	72655639	72656526
A7	OTTHUMT00007006749	CLDN4	7	72657433	72659112
A7	ENSESTT00000041251		7	72661015	72666499
A7	ENST00000297873	NM_152559	7	72661023	72668960
A7	OTTHUMT00007007226	mbhmh_nh_h_71200968_72100967_m_132805737	7	72661138	72668567
A7	ENSESTT00000041243		7	72687586	72692202
A7	ENST00000320531	NM_182504	7	72687586	72692314
A7	OTTHUMT00007007227	mbhmh_nh_h_71200968_72100967_m_132805737	7	72691651	72707065
A7	ENSESTT00000041244		7	72854539	72869441
A7	ENST00000320425	ELN	7	72854615	72895127
A7	ENST00000309678	Q14235	7	72854615	72895127
A7	ENST00000320492	Q8NBI4	7	72854615	72895127
A7	OTTHUMT00007006288	ELN	7	72854615	72895127

TABLE 3 (Continued)

A7	ENST00000320399	Q8N2G0	7	72854615	72896103
A7	ENST00000252034	O15337	7	72861793	72887565
A7	ENSESTT00000041245		7	72879278	72882774
A7	ENSESTT00000041246		7	72883099	72889621
A7	ENSESTT00000041247		7	72892119	72895391
A7	ENST00000265761	LIMK1	7	72910253	72948951
A7	OTTHUMT00007006772	LIMK1	7	72910253	72948951
A7	ENSESTT00000041248		7	72919602	72925577
A7	ENSESTT00000041249		7	72932555	72947826
A7	ENSESTT00000041250		7	72938074	72947826
A7	ENSESTT00000036020		7	73000780	73021942
A7	ENSESTT00000036019		7	73000780	73023522
A7	ENSESTT00000036021		7	73000783	73016740
A7	ENSESTT00000036016		7	73000792	73021897
A7	ENSESTT00000036017		7	73000792	73021897
A7	ENST00000265754	WBSCR1	7	73000803	73023526
A7	OTTHUMT00007006349	WBSCR1	7	73000803	73023526
A7	ENST00000265753	WBSCR1	7	73000811	73021735
A7	ENSESTT00000036018		7	73000834	73023522
A7	ENSESTT00000036027		7	73036361	73046683
A7	ENST00000309368	WBSCR5	7	73036372	73056254
A7	OTTHUMT00007006353	WBSCR5	7	73036372	73056260
A7	ENSESTT00000036028		7	73036409	73047047
A7	ENSESTT00000036029		7	73036413	73055741
A7	ENSESTT00000036030		7	73036479	73055741
A7	ENSESTT00000036031		7	73036487	73056261
A7	ENSESTT00000036033		7	73041247	73055741
A7	ENSESTT00000036032		7	73041247	73056261
A7	ENSESTT00000036034		7	73042370	73055741
A7	ENST00000315652	WBSCR5	7	73042403	73051169

TABLE 3 (Continued)

A7	ENSESTT00000036035		7	73046885	73055741
A7	ENST00000055077	RFC2	7	73057931	73080835
A7	OTTHUMT00007006563	RFC2	7	73058100	73080829
A7	ENSESTT00000036108		7	73058332	73076209
A7	ENSESTT00000036107		7	73058332	73080717
A7	ENSESTT00000036106		7	73058332	73080816
A7	ENSESTT00000036105		7	73058332	73080827
A7	ENSESTT00000036103		7	73058332	73080835
A7	ENST00000275627	RFC2	7	73058533	73080810
A7	ENSESTT00000036104		7	73058566	73080828
A7	OTTHUMT00007006304	CYLN2	7	73115902	73232362
A7	ENST00000275634	CYLN2	7	73143935	73227994
A7	ENST00000223398	CYLN2	7	73143974	73227994
A7	ENSESTT00000036039		7	73183000	73202399
A7	ENSESTT00000036040		7	73183883	73202625
A7	ENSESTT00000036041		7	73202736	73227995
A7	ENSESTT00000036042		7	73203042	73227995
A7	ENSESTT00000036043		7	73212952	73230806
A7	OTTHUMT00007007106	GTF2IRD1	7	73280217	73429013
A7	ENST00000265755	GTF2IRD1	7	73334508	73428857
A7	ENSESTT00000036044		7	73346006	73381903
A7	ENSESTT00000036045		7	73350521	73364601
A7	OTTHUMT00007006631	WBSCR23	7	73358718	73361335
A7	OTTHUMT00007007275	Hs_7_c1118	7	73360975	73361085
A7	ENSESTT00000036046		7	73373585	73429028
A7	ENSESTT00000036047		7	73427384	73429022
A7	ENSESTT00000036048		7	73484123	73517534
A7	OTTHUMT00007006793	GTF2I	7	73484127	73587111
A7	ENSESTT00000036102		7	73515362	73526731
A7	ENSESTT00000036051		7	73515542	73564552

TABLE 3 (Continued)

A7	ENSESTT00000036052		7	73515542	73564552
A7	ENSESTT00000036049		7	73515542	73566495
A7	ENSESTT00000036050		7	73515542	73566495
A7	ENST00000324924	NM_033000	7	73515552	73585257
A7	ENST00000324906	GTF2I	7	73515552	73585257
A7	ENST00000324896	GTF2I	7	73515552	73587109
A7	ENSESTT00000036053		7	73517393	73555329
A7	ENSESTT00000036063		7	73569898	73575881
A7	ENSESTT00000036062		7	73569898	73581959
A7	ENSESTT00000036061		7	73569898	73585643
A7	ENSESTT00000036060		7	73569898	73586353
A7	ENSESTT00000036059		7	73569898	73586387
A7	ENSESTT00000036058		7	73569898	73586401
A7	ENSESTT00000036069		7	73571185	73575881
A7	ENSESTT00000036068		7	73571185	73581959
A7	ENSESTT00000036067		7	73571185	73585643
A7	ENSESTT00000036066		7	73571185	73586353
A7	ENSESTT00000036065		7	73571185	73586387
A7	ENSESTT00000036064		7	73571185	73586401
A7	ENSESTT00000036074		7	73572309	73581959
A7	ENSESTT00000036073		7	73572309	73585643
A7	ENSESTT00000036072		7	73572309	73586353
A7	ENSESTT00000036071		7	73572309	73586387
A7	ENSESTT00000036070		7	73572309	73586401
A7	ENSESTT00000036075		7	73574439	73581959
A7	ENSESTT00000036076		7	73583165	73585027
A7	ENSESTT00000036077		7	73584379	73586387
A7	OTTHUMT00007006732	NCF1.2	7	73600398	73615746
A7	ENSESTT00000036086		7	73600417	73610049
A7	ENST00000289473	NCF1	7	73600468	73615593

TABLE 3 (Continued)

A7	ENSESTT00000036087		7	73611674	73615748
A7	ENSESTT00000036088		7	73611704	73615748
A7	ENSESTT00000036089		7	73614408	73615753
A7	ENST00000302215	NM_032203	7	73622573	73679914
A7	OTTHUMT00007006446	mbhmh_H_NH0813J07_F171046.fgenesh2.2	7	73623090	73663589
A7	ENSESTT00000036101		7	73659841	73679927
A7	OTTHUMT00007007215	DKFZP434A0131.1	7	73706764	73718764
A7	ENST00000308103	NM_018991	7	73710352	73713295
A7	OTTHUMT00007008153	Hs_7_c5086	7	73711129	73713351
A7	OTTHUMT00007007303	Hs_7_c1127	7	73718511	73733865
A7	ENST00000318547	PMS2L5	7	73718985	73733868
A7	ENSESTT00000036090		7	73718990	73726032
A7	ENSESTT00000036091		7	73719013	73733949
A7	ENST00000318568	Q16673	7	73722332	73729180
A7	ENSESTT00000036092		7	73726925	73728321
A7	ENST00000333385	Q86WY7	7	73732679	73739325
A7	OTTHUMT00007006291	mfhmh_chr7.73.013.a	7	73733861	73770943
A7	ENST00000328350		7	73737708	73740340
A7	ENST00000330313		7	73791140	73844306
A7	ENST00000332301		7	73791172	73850892
A7	ENSESTT00000036097		7	73868813	73883752
A7	ENST00000329959	WBSCR16	7	73869229	73901788
A7	ENSESTT00000036098		7	73882190	73901764
A7	ENSESTT00000036099		7	73889107	73901764
A7	ENSESTT00000036100		7	73892480	73901764
A7	ENST00000334260	Q86WX4	7	73920467	73954376
A7	ENSESTT00000036093		7	73920470	73940594
A7	ENST00000312575	NM_032203	7	73962893	73977192
A7	ENSESTT00000036094		7	73966809	73969279

TABLE 3 (Continued)

A7	ENST00000297905		7	73984689	73999836
A7	ENSESTT00000036095		7	73990260	73999885
A7	ENSESTT00000036096		7	73990542	73999843
A7	ENSESTT00000037870		7	74013902	74027990
A7	ENSESTT00000037865		7	74013902	74029114
A7	ENSESTT00000037876		7	74013902	74030393
A7	ENSESTT00000037871		7	74013903	74027990
A7	ENSESTT00000037866		7	74013903	74029114
A7	ENSESTT00000037877		7	74013903	74030393
A7	ENSESTT00000037872		7	74013951	74027990
A7	ENSESTT00000037867		7	74013951	74029114
A7	ENSESTT00000037878		7	74013951	74030393
A7	ENSESTT00000037873		7	74014662	74027990
A7	ENSESTT00000037868		7	74014662	74029114
A7	ENSESTT00000037879		7	74014662	74030393
A7	ENSESTT00000037875		7	74018346	74025862
A7	ENSESTT00000037874		7	74018346	74027990
A7	ENSESTT00000037869		7	74018346	74029114
A7	ENSESTT00000037880		7	74018346	74030393
A7	ENSESTT00000037864		7	74033799	74065179
A7	ENST00000335657	Q86WY7	7	74111817	74114021
A7	ENSESTT00000037828		7	74114121	74528229
A7	ENSESTT00000037860		7	74114936	74600365
A7	ENST00000329909	PMS2L5	7	74115017	74124654
A7	ENST00000311576		7	74115017	74126741
A7	ENSESTT00000037831		7	74378046	74402224
A7	ENSESTT00000037829		7	74386841	74402224
A7	ENSESTT00000037830		7	74400341	74402224
A7	ENSESTT00000037832		7	74412873	74413761
A7	ENSESTT00000037833		7	74415176	74417728

TABLE 3 (Continued)

A7	ENST00000317042	Q9P1E6	7	74415789	74416214
A7	OTTHUMT00007006787	mbhmh_h_72800966_73394042_m_132005738_13	7	74418388	74470222
A7	ENST00000311251		7	74419694	74479430
A7	OTTHUMT00007007356	Hs_7_c1145	7	74523575	74584324
A7	ENST00000333996	Q86WY7	7	74524542	74556308
A7	ENST00000335396	Q86WY7	7	74526082	74528285
A7	ENST00000302439	PMS2L6	7	74526852	74541042
A7	ENSESTT00000037834		7	74528385	74556252
A7	ENSESTT00000037862		7	74529200	74566962
A7	ENST00000311139	PMS2L5	7	74529281	74538934
A7	ENST00000314850		7	74529281	74541015
A7	OTTHUMT00007008169	Hs_7_c5090	7	74529284	74600754
A7	ENSESTT00000037861		7	74538952	74567012
A7	ENST00000251624	PMS2L6	7	74554875	74569067
A7	ENSESTT00000037835		7	74556408	74584271
A7	ENST00000305928		7	74557304	74569040
A7	ENST00000335010	Q86WY7	7	74582125	74584327
A7	ENSESTT00000037836		7	74584427	74743294
A7	ENSESTT00000037863		7	74585242	74594942
A7	ENST00000310939		7	74585323	74600345
A7	ENSESTT00000037837		7	74600539	74603386
A7	ENSESTT00000037838		7	74600635	74607984
A7	OTTHUMT00007008170	Hs_7_c5091	7	74605989	74608444
A7	ENST00000325462	NM_018991	7	74606045	74609003
A7	OTTHUMT00007007218	DKFZP434A0131.2	7	74606957	74631908
A7	ENSESTT00000037840		7	74607712	74637304
A7	ENSESTT00000037839		7	74607712	74640405
A7	ENSESTT00000037841		7	74611418	74612259

TABLE 3 (Continued)

A7	ENST00000275590	Q8WW08	7	74633749	74636644
A7	ENSESTT00000037859		7	74634716	74636774
A7	OTTHUMT00007006277	mbhmh_h_73557902 _74457901_m_ 133948896 _13	7	74634728	74636644
A7	ENST00000323819	Q86UV7	7	74636992	74646977
A7	OTTHUMT00007006661	mfhmh_h_73557902_ 74457901_m_ 133948896_13	7	74640307	74649026
A7	ENSESTT00000037842		7	74640495	74645112
A7	ENSESTT00000037843		7	74651721	74653100
A7	OTTHUMT00007007377	Hs_7_c1152	7	74651740	74657781
A7	ENSESTT00000037844		7	74651742	74656591
A7	ENSESTT00000037845		7	74652026	74657514
A7	ENST00000323788	NM_145645	7	74654800	74657968
A7	ENSESTT00000037846		7	74655026	74657893
A7	ENSESTT00000037847		7	74656958	74658035
A7	ENSESTT00000037848		7	74657213	74657787
A7	ENST00000257665	POM121	7	74658837	74684082
A7	ENSESTT00000037858		7	74659912	74663188
A7	OTTHUMT00007006280	mbhmh_h_73557902 _74457901_m_ 133948896_13	7	74660168	74684082
A7	ENSESTT00000037857		7	74664350	74666568
A7	ENSESTT00000037856		7	74666904	74679035
A7	ENSESTT00000037855		7	74682449	74716115
A7	ENSESTT00000037854		7	74716469	74769374
A7	ENST00000301990		7	74736524	74745533
A7	OTTHUMT00007007168	mbhmh_ts.74.012.a	7	74738139	74744350
A7	OTTHUMT00007007383	Hs_7_c1157	7	74744346	74752527

TABLE 3 (Continued)

A7	ENST00000248606	PMS2L3	7	74749246	74756200
A7	ENST00000301956	PMS2L9	7	74752342	74769228
A7	OTTHUMT00007007380	Hs_7_c1154	7	74753806	74769228
A7	ENSESTT00000037853		7	74757541	74769401
A7	OTTHUMT00007006447	HIP1	7	74775947	74840649
A7	ENSESTT00000037852		7	74779537	74786565
A7	ENST00000320938	HIP1	7	74779582	74980306
A7	ENSESTT00000037851		7	74788329	74797481
A7	ENSESTT00000037850		7	74799047	74804723
A7	ENSESTT00000037849		7	74895820	74980379
A7	OTTHUMT00007007406	Hs_7_c1160	7	74980208	74980327
A7	ENST00000005180	CCL26	7	75010931	75013663
A7	ENSESTT00000040258		7	75011028	75031153
A7	OTTHUMT00007006539	SCYA26	7	75011100	75013583
A7	ENST00000222902	CCL24	7	75053203	75055122
A7	OTTHUMT00007006535	SCYA24	7	75053203	75055122
A7	OTTHUMT00007007412	Hs_7_c1163	7	75077073	75077548
A7	ENST00000006777	NM_020684	7	75120355	75130328
A7	OTTHUMT00007007126	NPD007	7	75120355	75134177
A7	ENSESTT00000040185		7	75120424	75130279
A7	ENSESTT00000040186		7	75120432	75130279
A7	ENSESTT00000040257		7	75120464	75130107
A7	ENST00000318622	Q9UDT1	7	75120490	75122833
A7	ENSESTT00000040187		7	75120579	75129992
A7	ENSESTT00000040195		7	75156536	75222052
A7	ENSESTT00000040194		7	75156536	75225046
A7	ENSESTT00000040192		7	75156536	75225268
A7	ENSESTT00000040193		7	75156536	75225268
A7	ENSESTT00000040188		7	75156536	75226369
A7	ENSESTT00000040189		7	75156536	75226369

TABLE 3 (Continued)

A7	ENSESTT00000040190		7	75156536	75226369
A7	ENSESTT00000040191		7	75156536	75226369
A7	ENSESTT00000040202		7	75156536	75226773
A7	ENSESTT00000040203		7	75156536	75226773
A7	OTTHUMT00007007414	Hs_7_c1165	7	75164520	75164746
A7	OTTHUMT00007006487	mbhmh_h_73557902_ 74457901_m_ 133948896_13	7	75176809	75227888
A7	ENSESTT00000040200		7	75195386	75225046
A7	ENSESTT00000040199		7	75195386	75225268
A7	ENSESTT00000040197		7	75195386	75226369
A7	ENSESTT00000040198		7	75195386	75226369
A7	ENSESTT00000040196		7	75195386	75226773
A7	ENST00000265302	POR	7	75195400	75227888
A7	ENSESTT00000040201		7	75223628	75226773
A7	OTTHUMT00007007077	TMPIT	7	75228396	75236042
A7	ENSESTT00000040252		7	75229120	75236046
A7	ENSESTT00000040253		7	75229129	75236046
A7	ENSESTT00000040254		7	75229182	75236046
A7	ENSESTT00000040255		7	75229333	75236046
A7	ENSESTT00000040256		7	75229371	75236046
A7	ENSESTT00000040248		7	75237744	75255296
A7	ENSESTT00000040244		7	75237744	75289349
A7	ENSESTT00000040245		7	75237744	75289349
A7	ENSESTT00000040238		7	75237744	75289395
A7	ENSESTT00000040239		7	75237744	75289395
A7	ENSESTT00000040240		7	75237744	75289395
A7	ENSESTT00000040236		7	75237744	75295682
A7	ENSESTT00000040251		7	75237749	75242410
A7	ENSESTT00000040250		7	75237749	75246817

TABLE 3 (Continued)

A7	ENSESTT00000040249		7	75237749	75255296
A7	ENSESTT00000040247		7	75237749	75263402
A7	ENSESTT00000040246		7	75237749	75289349
A7	ENSESTT00000040241		7	75237749	75289395
A7	ENSESTT00000040242		7	75237749	75289395
A7	OTTHUMT00007006727	MK-STYX	7	75237749	75289410
A7	ENSESTT00000040237		7	75237749	75295682
A7	ENST00000248600	MSTY_HUMAN	7	75237875	75271930
A7	ENSESTT00000040243		7	75255146	75289370
A7	ENST00000315790		7	75288063	75288355
A7	ENSESTT00000040204		7	75289457	75308009
A7	ENST00000315758	MDH2	7	75289482	75308017
A7	OTTHUMT00007007151	MDH2	7	75289482	75308020
A7	ENSESTT00000040205		7	75289536	75308009
A7	ENSESTT00000040206		7	75305745	75308009
A7	OTTHUMT00007007750	Hs_7_c3073	7	75312957	75313204
A7	OTTHUMT00007007439	Hs_7_c1171	7	75315857	75316216
A7	OTTHUMT00007008045	Hs_7_c5123	7	75340845	75342813
A7	OTTHUMT00007007443	Hs_7_c1174	7	75349841	75373549
A7	ENST00000332057		7	75354317	75354842
A7	OTTHUMT00007007445	Hs_7_c1175	7	75354317	75354842
A7	OTTHUMT00007007446	Hs_7_c1176	7	75390863	75390964
A7	OTTHUMT00007007447	Hs_7_c1177	7	75415144	75418535
A7	ENSESTT00000040208		7	75443300	75501454
A7	ENSESTT00000040207		7	75443300	75506790
A7	ENSESTT00000040209		7	75443307	75506790
A7	ENSESTT00000040210		7	75476389	75501454
A7	ENST00000326382		7	75476473	75522894
A7	OTTHUMT00007006504	mbhmh_h_73557902 _74457901_m_			

TABLE 3 (Continued)

	133948896_13	7	75476474	75527249	
A7	ENSESTT00000040211		7	75514460	75522893
A7	ENSESTT00000040212		7	75523140	75527181
A7	ENST00000326284	NM_153043	7	75524053	75528692
A7	ENSESTT00000040213		7	75543994	75545679
A7	OTTHUMT00007006552	HSPB1	7	75544012	75545701
A7	ENST00000248553	HSPB1	7	75544012	75545702
A7	OTTHUMT00007006186	YWHAG	7	75568205	75600405
A7	ENST00000307630	YWHAG	7	75570983	75600214
A7	ENSESTT00000040235		7	75570997	75600397
A7	ENST00000325070		7	75602536	75603507
A7	ENST00000275560	SRCRB4D	7	75630735	75651095
A7	OTTHUMT00007006188	SRCRB4D	7	75630735	75651101
A7	ENSESTT00000040234		7	75631056	75638966
A7	ENST00000297799	Q96BF5	7	75631465	75635032
A7	OTTHUMT00007006555	ZP3A	7	75666341	75683471
A7	ENST00000257652	ZP3	7	75666371	75683468
A7	ENSESTT00000040214		7	75670977	75683476
A7	ENSESTT00000040215		7	75674328	75683368
A7	ENSESTT00000040216		7	75703078	75724019
A7	ENSESTT00000040217		7	75703114	75724170
A7	ENSESTT00000040218		7	75703116	75722103
A7	ENSESTT00000040219		7	75703123	75724122
A7	ENSESTT00000040220		7	75703136	75724190
A7	OTTHUMT00007006196	DTX2	7	75703141	75747397
A7	ENST00000324432	DTX2	7	75703143	75747007
A7	ENSESTT00000040221		7	75703158	75721985
A7	OTTHUMT00007007472	Hs_7_c1183	7	75711502	75712557
A7	ENST00000329896		7	75711568	75712530
A7	ENSESTT00000040222		7	75743571	75747401

TABLE 3 (Continued)

A7	ENSESTT00000040223		7	75751969	75756864
A7	ENSESTT00000040224		7	75751972	75755467
A7	ENSESTT00000040225		7	75752017	75756483
A7	ENST00000334348	UPK3B	7	75752059	75756610
A7	ENST00000257632	UPK3B	7	75752059	75756657
A7	ENSESTT00000040226		7	75752161	75755394
A7	ENSESTT00000040227		7	75752941	75756621
A7	ENST00000333674		7	75763339	75774103
A7	OTTHUMT00007007476	Hs_7_c1187	7	75765921	75774100
A7	ENST00000332397		7	75772915	75781708
A7	OTTHUMT00007007156	mbhmh_H_DJ1158B01_F218045.fgenesh2.2	7	75774096	75782865
A7	ENSESTT00000040233		7	75775379	75781751
A7	ENST00000328339		7	75777575	75780226
A7	OTTHUMT00007007474	Hs_7_c1186	7	75791024	75792928
A7	ENSESTT00000040229		7	75851392	75867091
A7	ENSESTT00000040228		7	75851392	75867499
A7	ENSESTT00000040232		7	75851392	75867499
A7	OTTHUMT00007006838	POMZP3	7	75851394	75868655
A7	ENST00000310842	POMZP3	7	75851570	75868652
A7	ENSESTT00000040230		7	75852858	75867011
A7	ENSESTT00000040231		7	75859587	75868162
A7	OTTHUMT00007007515	Hs_7_c1194	7	75891805	75892303
A7	OTTHUMT00007007518	Hs_7_c1196	7	76201256	76245716
A7	OTTHUMT00007007520	Hs_7_c1197	7	76209601	76210656
A7	ENST00000331556		7	76209667	76210629
A7	ENSESTT00000037296		7	76214085	76218367
A7	ENST00000307569		7	76220023	76231777
A7	ENST00000162863	PMS2L11	7	76243584	76257202

TABLE 3 (Continued)

A7	ENSESTT00000037258		7	76243673	76245780
A7	ENSESTT00000037261		7	76255577	76265170
A7	ENSESTT00000037259		7	76257204	76440006
A7	OTTHUMT00007007328	Hs_7_c1202	7	76260312	76295598
A7	ENST00000285792	Q86WY7	7	76263908	76269847
A7	ENSESTT00000037292		7	76264978	76266386
A7	OTTHUMT00007006602	mfhmh_gw11359887 .75188365.75365376 .7.9e-	7	76266095	76300760
A7	ENSESTT00000037291		7	76266148	76294084
A7	ENSESTT00000037295		7	76269559	76270744
A7	ENSESTT00000037294		7	76271927	76273767
A7	ENSESTT00000037293		7	76279424	76281262
A7	ENSESTT00000037290		7	76294463	76300803
A7	ENST00000330572		7	76297956	76299277
A7	OTTHUMT00007007330	Hs_7_c1203	7	76313155	76313732
A7	ENSESTT00000037289		7	76325407	76363754
A7	OTTHUMT00007006666	mbhmh_h_75248517 _76148516_m_ 19731738_198	7	76330887	76352916
A7	ENSESTT00000037288		7	76351350	76363761
A7	ENST00000327285		7	76356805	76357619
A7	OTTHUMT00007007332	Hs_7_c1204	7	76356814	76357592
A7	ENSESTT00000037260		7	76364104	76409308
A7	OTTHUMT00007006412	mbax_nh_gi17389564	7	76437484	76441197
A7	ENST00000248598	FGL2	7	76437495	76441207
A7	ENSESTT00000037287		7	76437634	76441213
A7	OTTHUMT00007006667	mbhmh_h_75248517 _76148516_m_ 19731738_198	7	76466089	76536234

TABLE 3 (Continued)

A7	ENST00000285871	Q96MS1	7	76478324	76520191
A7	ENST00000257657	Q9P223	7	76501336	76536578
A7	ENSESTT00000037262		7	76501508	76523986
A7	ENSESTT00000037264		7	76523852	76536589
A7	ENSESTT00000037263		7	76523852	76571386
A7	ENSESTT00000037284		7	76552119	76571745
A7	ENST00000257626	Q9Y4L9	7	76552120	76568852
A7	OTTHUMT00007007104	mbhmh_nh_h_75248517_76148516_m_18931739_	7	76552726	76605693
A7	ENSESTT00000037285		7	76552993	76571745
A7	ENSESTT00000037286		7	76562091	76567945
A7	ENST00000334003	Q8ND73	7	76571601	76647477
A7	ENSESTT00000037283		7	76571643	76596756
A7	OTTHUMT00007007105	mbhmh_nh_h_75248517_76148516_m_18931739_	7	76611431	76653274
A7	ENSESTT00000037282		7	76638369	76657235
A7	ENST00000310324	Q9BXE6	7	76751393	76751767
A7	ENSESTT00000037265		7	76778862	76839272
A7	OTTHUMT00007006825	PTPN12	7	76778886	76881437
A7	ENSESTT00000037266		7	76778907	76842330
A7	ENST00000248594	PTPN12	7	76778915	76880648
A7	ENSESTT00000037267		7	76805409	76842330
A7	ENSESTT00000037269		7	76848601	76881437
A7	ENSESTT00000037270		7	76848601	76881437
A7	ENSESTT00000037271		7	76848601	76881437
A7	ENSESTT00000037268		7	76848601	76895005
A7	ENSESTT00000037272		7	76873632	76881437
A7	ENSESTT00000037281		7	76875004	76889253

TABLE 3 (Continued)

A7	ENSESTT00000037273		7	76878133	76881437
A7	ENSESTT00000037274		7	76878340	76880309
A7	ENSESTT00000037278		7	76900557	76937634
A7	ENSESTT00000037275		7	76910887	76912750
A7	ENSESTT00000037279		7	76925217	76937634
A7	ENSESTT00000037280		7	76925311	76937620
A7	ENST00000334955	Q86X48	7	76937838	76977836
A7	OTTHUMT00007006307	mbhmh_h_75248517_76148516_m_18931739_198	7	76937838	77020536
A7	ENSESTT00000037277		7	76977776	76991120
A7	ENSESTT00000037276		7	76990885	77010048
A7	ENSESTT00000031431		7	77010043	77021059
A7	OTTHUMT00007006265	DC32	7	77035083	77039701
A7	ENST00000257663	C7orf35	7	77035084	77039798
A7	ENSESTT00000031444		7	77035096	77039946
A7	ENSESTT00000031445		7	77035258	77039797
A7	OTTHUMT00007006310	mbhmh_h_75248517_76148516_m_18931739_198	7	77081624	77196246
A7	ENST00000248550	Q8TBW4	7	77096101	77195265
A8	ENST00000256653	MAN1A2	1	117256452	117415542
A8	ENSESTT00000003501		1	117256479	117412324
A8	ENSESTT00000003500		1	117256479	117414355
A8	ENSESTT00000003502		1	117331232	117385841
A8	ENSESTT00000003523		1	117485833	117494713
A8	ENSESTT00000003503		1	117494976	117512577
A8	ENST00000328500	NM_017709	1	117495052	117517367
A8	ENST00000313132		1	117529727	117530632
A8	ENST00000334351	PNRC2	1	117667090	117667509

TABLE 3 (Continued)

A8	ENSESTT00000003522			1	117667118	117667900
A8	ENSESTT00000003520			1	117759186	117818631
A8	ENSESTT00000003521			1	117759281	117818631
A8	ENST00000263166	GDAP2		1	117759572	117818591
A8	ENSESTT00000003504			1	117818779	117823687
A8	ENST00000309112		Q9H141	1	117822324	117848451
A8	ENST00000183319		WDR3	1	117822324	117849059
A8	ENSESTT00000003505			1	117831482	117849104
A8	ENSESTT00000003518			1	117842855	117853814
A8	ENSESTT00000003515			1	117842859	117859122
A8	ENSESTT00000003519			1	117842865	117852907
A8	ENSESTT00000003517			1	117842865	117855703
A8	ENST00000286203		Q8NAZ1	1	117842866	118074161
A8	ENSESTT00000003516			1	117842868	117855764
A8	ENSESTT00000003513			1	117861020	117880531
A8	ENSESTT00000003514			1	117862486	117876996
A8	ENSESTT00000003512			1	117885713	117905184
A8	ENSESTT00000003510			1	117917336	117943048
A8	ENSESTT00000003511			1	117920750	117928350
A8	ENSESTT00000003509			1	117943055	117962920
A8	ENSESTT00000003507			1	117943058	117970490
A8	ENSESTT00000003508			1	117962945	117970300
A8	ENSESTT00000003506			1	117974982	117976166
A8	ENSESTT00000003436			1	118039391	118074185
A8	ENST00000334368		Q9UN81	1	118742261	118743277
A8	ENST00000207157		TBX15	1	118772051	118820834
A8	ENSESTT00000003435			1	118889344	118890396
A8	ENSESTT00000003434			1	118889622	118890409
A8	ENST00000235521		WARS2	1	118920227	119029659
A8	ENSESTT00000003433			1	118921825	118934670

TABLE 3 (Continued)

A8	ENSESTT00000003432		1	118922024	119029623
A8	ENST00000333224		1	119015816	119016295
A8	ENSESTT00000003526		1	119035413	119036037
A8	ENST00000330630		1	119108318	119108923
A8	ENSESTT00000003527		1	119217196	119219818
A8	ENSESTT00000003528		1	119217256	119245186
A8	ENSESTT00000003529		1	119257783	119275698
A8	ENSESTT00000003531		1	119257783	119281249
A8	ENSESTT00000003530		1	119269568	119281249
A8	ENST00000325945	HAO2	1	119270090	119282844
A8	ENST00000331050	Q8TDP9	1	119304149	119403649
A8	ENSESTT00000003533		1	119304154	119311277
A8	ENSESTT00000003532		1	119304154	119311779
A8	ENSESTT00000003534		1	119304167	119308609
A8	ENST00000303184	HSD3B2	1	119304424	119311624
A8	ENST00000333709	Q8TDP9	1	119304427	119403649
A8	ENST00000332017	Q8TDP9	1	119304427	119404056
A8	ENST00000256586	Q9H1N0	1	119328005	119334823
A8	ENST00000286193	Q9H1M9	1	119356225	119362218
A8	ENST00000331024		1	119385611	119385839
A8	ENSESTT00000003535		1	119396243	119404058
A8	ENSESTT00000003536		1	119396244	119397374
A8	ENSESTT00000003537		1	119396322	119404058
A8	ENST00000235547	HSD3B1	1	119396481	119403649
A8	ENST00000335580	Q9UDK8	1	119456897	119461071
A8	ENST00000331009		1	119485270	119485838
A8	ENST00000335229	Q9UD07	1	119494238	119494381
A8	ENST00000271263	Q96IT2	1	119511709	119512401
A8	ENSESTT00000003538		1	119600896	119633222
A8	ENSESTT00000003539		1	119600896	119633222

TABLE 3 (Continued)

A8	ENST00000263167	PHGDH	1	119601027	119633206
A8	ENSESTT00000003540		1	119615847	119633222
A8	ENSESTT00000003541		1	119615847	119633222
A8	ENSESTT00000003542		1	119616052	119619075
A8	ENSESTT00000003543		1	119626114	119633222
A8	ENST00000256633	HMGCS2	1	119637386	119657898
A8	ENSESTT00000003552		1	119637543	119657890
A8	ENSESTT00000003553		1	119648894	119657887
A8	ENSESTT00000003544		1	119653323	119657877
A8	ENST00000324032	Q8NER6	1	119683168	119700499
A8	ENSESTT00000003551		1	119683421	119700465
A8	ENSESTT00000003550		1	119683593	119692170
A8	ENST00000256585	REG4	1	119683622	119697773
A8	ENSESTT00000003549		1	119687553	119697870
A9	OTTHUMT00006006260	SLC26A8-001	6	35958152	36039212
A9	ENST00000229784	SLC26A8	6	35958327	36034339
A9	ENST00000310888	SLC26A8	6	35958532	36034339
A9	ENSESTT00000033005		6	36012429	36039125
A9	ENSESTT00000032935		6	36042425	36067456
A9	OTTHUMT00006006277	MAPK14-002	6	36042428	36123079
A9	OTTHUMT00006006276	MAPK14-001	6	36042428	36125390
A9	ENST00000229794	NM_139014	6	36042790	36122248
A9	ENST00000229795	MAPK14	6	36042790	36123079
A9	ENST00000310795	MAPK14	6	36042790	36123079
A9	ENSESTT00000032936		6	36090530	36124509
A9	OTTHUMT00006006258	dJ179N16.3-001	6	36106623	36107278
A9	OTTHUMT00006006270	MAPK13-005	6	36142441	36150464
A9	ENSESTT00000032938		6	36142441	36154698
A9	ENSESTT00000032937		6	36142441	36155902
A9	OTTHUMT00006006268	MAPK13-003	6	36144953	36154312

TABLE 3 (Continued)

A9	OTTHUMT00006006266	MAPK13-001	6	36144953	36154697
A9	ENST00000211287	MAPK13	6	36145117	36154697
A9	ENSESTT00000032940		6	36145142	36154698
A9	ENSESTT00000032939		6	36145142	36155902
A9	ENSESTT00000032941		6	36145145	36151536
A9	ENSESTT00000032943		6	36145202	36154698
A9	ENSESTT00000032942		6	36145202	36155902
A9	ENSESTT00000032944		6	36145273	36146034
A9	OTTHUMT00006006269	MAPK13-004	6	36145295	36153839
A9	OTTHUMT00006006267	MAPK13-002	6	36145501	36151147
A9	OTTHUMT00006006280	BRPF3-001	6	36211405	36247418
A9	ENST00000322766	BRPF3	6	36211405	36247421
A9	ENSESTT00000032945		6	36212028	36215240
A9	ENSESTT00000032946		6	36215902	36224498
A9	OTTHUMT00006006281	BRPF3-002	6	36225130	36247418
A9	ENST00000211291	Q9NWM1	6	36225982	36245352
A9	ENSESTT00000032947		6	36228665	36232584
A9	ENSESTT00000032948		6	36239919	36246148
A9	OTTHUMT00006006284	dJ50J22.1-001	6	36285116	36310051
A9	ENST00000312917	PNPLA1	6	36306032	36323227
A9	OTTHUMT00006006294	dJ50J22.5-001	6	36317034	36327443
A9	OTTHUMT00006006290	dJ50J22.3-001	6	36331805	36334066
A9	OTTHUMT00006006286	dJ50J22.2-001	6	36380826	36402415
A9	OTTHUMT00006006287	dJ50J22.2-002	6	36380826	36402415
A9	ENST00000229480	ETV7	6	36380827	36402349
A9	ENSESTT00000033001		6	36390551	36402400
A9	OTTHUMT00006006292	dJ50J22.4-001	6	36401463	36406626
A9	ENST00000316266	NM_152990	6	36405183	36415166
A9	OTTHUMT00006006296	dJ347L7.1-001	6	36415095	36457521
A9	ENSESTT00000032949		6	36457399	36458352

TABLE 3 (Continued)

A9	ENST00000265344	C6orf69	6	36457399	36505168
A9	OTTHUMT00006006298	dJ108K11.3-001	6	36457619	36505775
A9	ENSESTT00000032950		6	36484759	36499460
A9	ENSESTT00000032952		6	36499410	36503191
A9	ENSESTT00000032951		6	36499410	36505772
A9	ENSESTT00000032953		6	36501514	36505772
A9	OTTHUMT00006006300	STK38-001	6	36508524	36562102
A9	ENST00000229812	STK38	6	36508531	36562102
A9	ENSESTT00000032999		6	36510468	36522221
A9	ENSESTT00000032996		6	36530077	36562102
A9	ENSESTT00000032955		6	36608994	36616435
A9	ENSESTT00000032954		6	36608994	36617545
A9	OTTHUMT00006006302	SFRS3-001	6	36609000	36618064
A9	OTTHUMT00006006303	SFRS3-002	6	36609023	36616672
A9	ENST00000244437	SFRS3	6	36611395	36617408
A9	ENST00000317631		6	36688401	36689903
A9	OTTHUMT00006006306	dJ193M11.1-001	6	36688449	36689902
A9	OTTHUMT00006012688	CDKN1A-005	6	36691160	36699143
A9	ENSESTT00000032956		6	36692420	36701950
A9	OTTHUMT00006012684	CDKN1A-001	6	36693290	36701971
A9	ENST00000244741	CDKN1A	6	36693342	36701963
A9	OTTHUMT00006012685	CDKN1A-002	6	36693353	36700556
A9	ENSESTT00000032957		6	36693354	36701950
A9	OTTHUMT00006012687	CDKN1A-004	6	36693358	36699130
A9	OTTHUMT00006012686	CDKN1A-003	6	36693403	36695312
A9	ENSESTT00000032958		6	36693403	36695312
A9	OTTHUMT00006011804	dJ431A14.3-001	6	36737227	36743433
A9	ENST00000229824		6	36737257	36745385
A9	ENST00000310390	Q8TDV1	6	36751637	36752338
A9	OTTHUMT00006006308	dJ431A14.4-001	6	36751682	36752618

TABLE 3 (Continued)

A9	OTTHUMT00006006311	dJ431A14.5-002	6	36755407	36772013
A9	ENST00000244751	CPNE5	6	36755410	36854008
A9	OTTHUMT00006006310	dJ431A14.5-001	6	36755410	36854633
A9	ENSESTT00000032989		6	36758313	36772015
A9	OTTHUMT00006006312	dJ431A14.5-003	6	36760019	36772013
A9	ENSESTT00000032990		6	36760019	36772013
A9	ENSESTT00000032987		6	36760019	36780337
A9	ENSESTT00000032988		6	36760024	36772025
A9	OTTHUMT00006006351	PPIL1-002	6	36869458	36873266
A9	OTTHUMT00006006350	PPIL1-001	6	36869458	36889655
A9	ENST00000244367	PPIL1	6	36869463	36889629
A9	ENSESTT00000032983		6	36870099	36889655
A9	ENSESTT00000032984		6	36870254	36886506
A9	OTTHUMT00006006316	dJ90K10.2-001	6	36886501	36939186
A9	OTTHUMT00006006319	dJ90K10.2-004	6	36900485	36931139
A9	OTTHUMT00006006317	dJ90K10.2-002	6	36900495	36938153
A9	OTTHUMT00006006318	dJ90K10.2-003	6	36900495	36938153
A9	ENST00000314503	C6orf89	6	36900495	36941175
A9	ENSESTT00000032959		6	36900540	36938610
A9	OTTHUMT00006006320	dJ90K10.2-005	6	36900544	36938203
A9	ENSESTT00000032960		6	36900558	36929229
A9	ENSESTT00000032961		6	36909132	36938610
A9	OTTHUMT00006006326	dJ90K10.3-001	6	36943210	36943499
A9	OTTHUMT00006006328	dJ90K10.4-001	6	36954718	36959306
A9	ENST00000297048	PI16	6	36969064	36979463
A9	OTTHUMT00006006330	dJ90K10.5-001	6	36969064	36979468
A9	ENSESTT00000032962		6	36969360	36974006
A9	ENSESTT00000032963		6	36969368	36978833
A9	ENSESTT00000032964		6	36969383	36978833
A9	OTTHUMT00006006331	dJ90K10.5-002	6	36977621	36979298

TABLE 3 (Continued)

A9	OTTHUMT00006006335	dJ90K10.6-002	6	36982772	36991863
A9	OTTHUMT00006006341	dJ90K10.6-008	6	36982772	37000929
A9	OTTHUMT00006006334	dJ90K10.6-001	6	36982772	37000929
A9	ENSESTT00000032969		6	36983213	36992788
A9	ENSESTT00000032965		6	36983213	37000795
A9	ENSESTT00000032966		6	36983310	37000795
A9	ENSESTT00000032967		6	36983310	37000795
A9	OTTHUMT00006006340	dJ90K10.6-007	6	36983368	37000612
A9	ENST00000259958	MTCH1	6	36983368	37000747
A9	OTTHUMT00006006337	dJ90K10.6-004	6	36983391	36985547
A9	OTTHUMT00006006336	dJ90K10.6-003	6	36983543	36992304
A9	OTTHUMT00006006338	dJ90K10.6-005	6	36984097	36987385
A9	ENSESTT00000032968		6	36984669	37000795
A9	OTTHUMT00006006339	dJ90K10.6-006	6	36984687	36987307
A9	OTTHUMT00006006356	FGD2-001	6	37020277	37042929
A9	ENSESTT00000035539		6	37020289	37026654
A9	ENSESTT00000035540		6	37020301	37028317
A9	ENST00000274963	FGD2	6	37020330	37043169
A9	ENSESTT00000035541		6	37040439	37042882
A9	OTTHUMT00006006354	dJ405J24.2-001	6	37059462	37060032
A9	ENST00000297147	O95101	6	37059560	37059820
A9	OTTHUMT00006006358	dJ441G21.1-001	6	37105853	37106493
A9	ENST00000310055		6	37105943	37106437
A9	ENSESTT00000035542		6	37184786	37185779
A9	ENSESTT00000035543		6	37184786	37185779
A9	OTTHUMT00006012708	PIM1-003	6	37184834	37190057
A9	ENST00000259722	PIM1	6	37184841	37190057
A9	ENSESTT00000035544		6	37185789	37190059
A9	OTTHUMT00006012709	PIM1-004	6	37187099	37188878
A9	ENSESTT00000035545		6	37187103	37190059

TABLE 3 (Continued)

A9	OTTHUMT00006012706	PIM1-001	6	37187125	37188943
A9	ENSESTT00000035546		6	37187125	37190059
A9	OTTHUMT00006012707	PIM1-002	6	37187627	37190057
A9	OTTHUMT00006006360	dJ355M6.2-001	6	37226811	37272786
A9	ENST00000316899	Q8TC54	6	37226812	37233661
A9	OTTHUMT00006006361	dJ355M6.2-002	6	37227067	37272267
A9	ENST00000316909	NM_145316	6	37229829	37233661
A9	ENSESTT00000035577		6	37233261	37272786
A9	OTTHUMT00006006364	dJ744I24.2-001	6	37272403	37347601
A9	ENSESTT00000035547		6	37272498	37294209
A9	ENST00000229492	C6orf197	6	37298967	37347600
A9	ENSESTT00000035548		6	37331324	37347601
A9	ENSESTT00000035549		6	37331816	37339289
A9	OTTHUMT00006006366	RNF8-001	6	37368684	37409364
A9	ENSESTT00000035550		6	37368716	37386205
A9	ENST00000229866	RNF8	6	37368796	37395990
A9	ENSESTT00000035551		6	37383509	37405872
A9	OTTHUMT00006006367	RNF8-002	6	37383520	37391647
A9	ENSESTT00000035554		6	37383557	37405862
A9	ENSESTT00000035552		6	37383557	37405872
A9	ENSESTT00000035553		6	37383557	37405872
A9	ENSESTT00000035555		6	37391555	37405872
A9	ENSESTT00000035556		6	37447848	37474233
A9	OTTHUMT00006006384	dJ153P14.1-009	6	37447850	37458714
A9	ENSESTT00000035557		6	37447850	37474233
A9	OTTHUMT00006006377	dJ153P14.1-002	6	37447851	37476692
A9	OTTHUMT00006006376	dJ153P14.1-001	6	37447851	37496137
A9	ENST00000259729	NM_015050	6	37450261	37496137
A9	OTTHUMT00006006383	dJ153P14.1-008	6	37467109	37473320
A9	ENSESTT00000035558		6	37474283	37488203

TABLE 3 (Continued)

A9	OTTHUMT00006006378	dJ153P14.1-003	6	37474290	37476703
A9	ENSESTT00000035559		6	37474290	37476703
A9	OTTHUMT00006006380	dJ153P14.1-005	6	37477502	37495903
A9	OTTHUMT00006006379	dJ153P14.1-004	6	37488199	37493826
A9	ENSESTT00000035560		6	37489154	37496138
A9	ENSESTT00000035561		6	37489159	37493872
A9	OTTHUMT00006006382	dJ153P14.1-007	6	37489950	37497458
A9	ENSESTT00000035562		6	37489950	37497460
A9	OTTHUMT00006006381	dJ153P14.1-006	6	37489976	37495777
A9	OTTHUMT00006006394	dJ153P14.2-001	6	37497551	37514553
A9	ENSESTT00000035575		6	37497563	37514525
A9	ENST00000259975	Q9P0B6	6	37497563	37514553
A9	ENSESTT00000035576		6	37497569	37499495
A9	ENSESTT00000035574		6	37497716	37514544
A9	OTTHUMT00006006395	dJ153P14.2-002	6	37497716	37514553
A9	OTTHUMT00006006370	dJ153P14.3-001	6	37558184	37561386
A9	ENSESTT00000035573		6	37558184	37561393
A9	OTTHUMT00006006372	dJ153P14.4-001	6	37561183	37562345
A9	ENSESTT00000035563		6	37564634	37565497
A9	OTTHUMT00006006374	dJ153P14.5-001	6	37564635	37565491
A9	ENSESTT00000035571		6	37651734	37660878
A9	OTTHUMT00006006400	dJ402N21.2-001	6	37651734	37669174
A9	ENST00000297153	MDGA1	6	37651999	37711442
A9	ENST00000229875	Q8NBE3	6	37652690	37660859
A9	ENSESTT00000035572		6	37653259	37656528
A9	ENSESTT00000035568		6	37663817	37669088
A9	ENSESTT00000035570		6	37664502	37666973
A9	ENSESTT00000035569		6	37664502	37669088
A9	OTTHUMT00006006398	dJ402N21.1-001	6	37670396	37711576
A9	ENSESTT00000035567		6	37672943	37711576

TABLE 3 (Continued)

A9	OTTHUMT00006006402	dJ441A12.1-001	6	37830408	37833849
A9	ENSESTT00000035566		6	37833212	37833973
A9	ENSESTT00000035564		6	37834162	37944634
A9	OTTHUMT00006006406	TEX27-001	6	37834162	38169252
A9	ENSESTT00000035565		6	37834188	38166902
A9	ENST00000287218	TEX27	6	37834577	38167020
A9	OTTHUMT00006006407	TEX27-002	6	37944570	38097088
A9	ENSESTT00000028267		6	38016900	38018551
A9	OTTHUMT00006006404	bA420A21.1-001	6	38017463	38017944
A9	OTTHUMT00006006408	TEX27-003	6	38076242	38077291
A9	ENSESTT00000028247		6	38076350	38168417
A9	OTTHUMT00006006409	TEX27-004	6	38131203	38156962
A9	OTTHUMT00006006414	dJ295F6.2-001	6	38177432	38178435
A9	OTTHUMT00006006425	dJ322I12.1-004	6	38185948	38654445
A9	OTTHUMT00006006416	dJ322I12.2-001	6	38188304	38191924
A9	OTTHUMT00006006426	dJ322I12.1-005	6	38189588	38359724
A9	ENSESTT00000028266		6	38189682	38271074
A9	ENST00000320902	Q8NAH5	6	38193995	38194495
A9	OTTHUMT00006006423	dJ322I12.1-002	6	38302912	38594901
A9	ENSESTT00000028248		6	38496227	38497741
A9	OTTHUMT00006006418	bA430C17.1-001	6	38496323	38497162
A9	OTTHUMT00006006422	dJ322I12.1-001	6	38592231	38610698
A9	OTTHUMT00006006420	dJ319M7.2-001	6	38601954	38603160
A9	ENST00000328403	BTBD9	6	38607118	38612725
A9	OTTHUMT00006006424	dJ322I12.1-003	6	38608899	38654542
A9	OTTHUMT00006006435	GLO1-002	6	38690574	38697846
A9	OTTHUMT00006006434	GLO1-001	6	38690574	38717772
A9	ENST00000244746	GLO1	6	38690575	38717772
A9	ENSESTT00000028264		6	38690577	38717784
A9	ENSESTT00000028262		6	38691212	38699147

TABLE 3 (Continued)

A9	ENSESTT00000028258		6	38691212	38717784
A9	ENSESTT00000028265		6	38691212	38717784
A9	ENSESTT00000028263		6	38691365	38696733
A9	ENSESTT00000028259		6	38696639	38717784
A9	ENSESTT00000028260		6	38696641	38717784
A9	ENSESTT00000028261		6	38697434	38717784
A9	OTTHUMT00006006432	dJ503A6.2-001	6	38728682	38729848
A9	ENSESTT00000028257		6	38728682	38729848
A9	ENST00000327475	Q8IU65	6	38729972	38749145
A9	OTTHUMT00006012038	DNAH8-003	6	38737477	38986711
A9	OTTHUMT00006012037	DNAH8-002	6	38737477	39045150
A9	OTTHUMT00006012036	DNAH8-001	6	38737753	39045156
A9	ENST00000244699	DNAH8	6	38749146	39045422
A9	OTTHUMT00006011850	dJ217P22.2-001	6	38777536	38779325
A9	ENSESTT00000028249		6	38872332	38878623
A9	OTTHUMT00006012039	DNAH8-004	6	38878600	38885121
A9	ENSESTT00000028250		6	38887623	38888176
A9	OTTHUMT00006006438	dJ207H1.3-001	6	38937660	38946002
A9	OTTHUMT00006006439	dJ207H1.3-002	6	38937660	38967730
A9	ENSESTT00000028255		6	38939657	38948048
A9	ENSESTT00000028251		6	38940722	38944241
A9	OTTHUMT00006011974	dJ207H1.2-001	6	38942662	38942784
A9	OTTHUMT00006006440	dJ207H1.3-003	6	38943981	38947548
A9	ENSESTT00000028256		6	38943981	38947548
A9	ENSESTT00000028254		6	38958559	38967720
A9	ENSESTT00000028252		6	38966101	38988421
A9	ENSESTT00000028253		6	38998885	39027120
A9	ENSESTT00000028268		6	39027083	39045160
A9	OTTHUMT00006006452	dJ202I21.3-001	6	39054234	39054616
A9	OTTHUMT00006006444	GLP1R-001	6	39063429	39102374

TABLE 3 (Continued)

A9	ENST00000229900	GLP1R	6	39063472	39100704
A9	ENSESTT00000028298		6	39118691	39124040
A9	ENSESTT00000028296		6	39118691	39129820
A9	OTTHUMT00006006446	dJ202I21.1-001	6	39118695	39124203
A9	OTTHUMT00006006448	dJ202I21.1-003	6	39118695	39129820
A9	ENST00000229903	C6orf64	6	39119524	39129720
A9	OTTHUMT00006006454	dJ202I21.5-001	6	39124952	39127583
A9	OTTHUMT00006006447	dJ202I21.1-002	6	39127706	39129702
A9	ENSESTT00000028297		6	39127885	39129702
A9	OTTHUMT00006006456	KCNK5-001	6	39203604	39244081
A9	ENST00000297169	KCNK5	6	39205521	39243742
A9	ENSESTT00000028294		6	39205943	39243759
A9	ENSESTT00000028295		6	39208772	39243759
A9	OTTHUMT00006006464	KCNK17-001	6	39313632	39329053
A9	ENSESTT00000028293		6	39314030	39315137
A9	ENSESTT00000028292		6	39314058	39319209
A9	ENST00000244759	KCNK17	6	39314058	39328951
A9	OTTHUMT00006006462	KCNK16-001	6	39329336	39337171
A9	ENSESTT00000028290		6	39329579	39337599
A9	ENST00000211196	KCNK16	6	39329633	39337171
A9	ENSESTT00000028291		6	39332507	39337185
A9	ENSESTT00000028289		6	39350785	39358362
A9	OTTHUMT00006006460	dJ137F1.4-001	6	39350785	39400304
A9	ENST00000297170	C6orf102	6	39358338	39445790
A9	ENST00000229913	Q86T87	6	39358338	39554716
A9	OTTHUMT00006006458	dJ137F1.3-001	6	39368378	39368803
A9	OTTHUMT00006006466	dJ188D3.1-001	6	39434570	39445946
A9	OTTHUMT00006006470	dJ1043E3.1-001	6	39554634	39740037
A9	ENSESTT00000028286		6	39554831	39599605
A9	ENSESTT00000028284		6	39554831	39601027

TABLE 3 (Continued)

A9	OTTHUMT00006006472	dJ1043E3.1-003	6	39559134	39592907
A9	ENST00000287152		6	39559160	39739941
A9	ENSESTT00000028288		6	39559179	39592907
A9	ENSESTT00000028285		6	39559179	39600971
A9	OTTHUMT00006006468	dJ1043E3.2-001	6	39568448	39569574
A9	ENSESTT00000028287		6	39597804	39599586
A9	OTTHUMT00006006471	dJ1043E3.1-002	6	39597806	39610891
A9	ENSESTT00000028283		6	39610746	39689117
A9	OTTHUMT00006006473	dJ1043E3.1-004	6	39705830	39729590
A9	ENSESTT00000028282		6	39706266	39739928
A9	ENSESTT00000028269		6	39807005	39879702
A9	ENST00000274867	DAAM2	6	39807649	39919503
A9	ENSESTT00000028270		6	39836736	39879669
A9	ENSESTT00000028271		6	39863403	39875800
A9	OTTHUMT00006006489	dJ278E11.1-006	6	39870878	39876106
A9	OTTHUMT00006006485	dJ278E11.1-002	6	39870878	39882152
A9	OTTHUMT00006006484	dJ278E11.1-001	6	39870878	39919499
A9	OTTHUMT00006006486	dJ278E11.1-003	6	39882351	39919496
A9	ENSESTT00000028272		6	39884968	39893094
A9	OTTHUMT00006006487	dJ278E11.1-004	6	39887977	39893404
A9	OTTHUMT00006006488	dJ278E11.1-005	6	39902036	39905992
A9	OTTHUMT00006006480	bA61I13.3-001	6	39903421	39911984
A9	OTTHUMT00006006481	bA61I13.3-002	6	39903505	39912011
A9	ENSESTT00000028281		6	39903505	39912011
A9	ENSESTT00000028273		6	39911507	39913571
A9	ENSESTT00000028274		6	39911802	39919761
A9	OTTHUMT00006006478	bA61I13.2-001	6	39911971	39914702
A9	ENSESTT00000028279		6	39917315	39919496
A9	ENSESTT00000028280		6	39917519	39918030
A9	OTTHUMT00006006504	MOCS1-005	6	39919690	39926973

TABLE 3 (Continued)

A9	OTTHUMT00006006505	MOCS1-006	6	39919690	39927603
A9	OTTHUMT00006006506	MOCS1-007	6	39919690	39927603
A9	OTTHUMT00006006502	MOCS1-003	6	39919690	39941994
A9	OTTHUMT00006006500	MOCS1-001	6	39919690	39942310
A9	OTTHUMT00006006501	MOCS1-002	6	39919690	39949091
A9	OTTHUMT00006006507	MOCS1-008	6	39919690	39949106
A9	ENSESTT00000028275		6	39920144	39926919
A9	ENST00000274884	MOCS1	6	39920154	39949011
A9	ENST00000308559	MOCS1	6	39920988	39942172
A9	ENSESTT00000028278		6	39921368	39928029
A9	ENSESTT00000028276		6	39924433	39949106
A9	OTTHUMT00006006503	MOCS1-004	6	39926863	39947026
A9	ENSESTT00000028277		6	39941918	39949056
A9	ENST00000320371		6	39973005	39973427
A9	OTTHUMT00006006496	dJ278E11.3-001	6	39973008	39973427
A9	OTTHUMT00006006498	dJ278E11.5-001	6	40007409	40014827
A9	ENST00000333628		6	40014193	40014863
A9	OTTHUMT00006006516	bA552E20.1-001	6	40286160	40290831
A9	OTTHUMT00006006524	bA535K1.1-003	6	40349548	40394479
A9	OTTHUMT00006006525	bA535K1.1-004	6	40355059	40394479
A9	ENSESTT00000026515		6	40358936	40360627
A9	OTTHUMT00006006518	bA552E20.3-001	6	40358938	40360745
A9	OTTHUMT00006006520	bA552E20.4-001	6	40373338	40384068
A9	OTTHUMT00006006522	bA535K1.1-001	6	40392931	40394479
A9	OTTHUMT00006006523	bA535K1.1-002	6	40392931	40394479
A9	ENSESTT00000026510		6	40392944	40394492
A9	ENSESTT00000026509		6	40393305	40394492
A9	OTTHUMT00006006532	bA535K1.2-001	6	40406180	40602059
A9	ENST00000287126	Q9ULH4	6	40406228	40601981
A9	ENSESTT00000026512		6	40447652	40601916

TABLE 3 (Continued)

A9	OTTHUMT00006006530	bA121P10.1-001	6	40516225	40516987
A9	ENSESTT00000026514		6	40516225	40516987
A9	OTTHUMT00006006534	dJ462C17.1-001	6	40530930	40538527
A9	ENSESTT00000026513		6	40530930	40538527
A9	OTTHUMT00006006536	bA570K4.1-001	6	40728005	40729957
A9	ENSESTT00000026511		6	40728005	40729957
A10	ENSESTT00000052482		18	71312402	71313353
A10	ENSESTT00000052481		18	71536395	71551301
A10	ENSESTT00000052480		18	71962357	71963077
A10	ENSESTT00000056790		18	72048442	72054756
A10	ENSESTT00000056791		18	72098098	72099051
A10	ENST00000217537	Y222_HUMAN	18	72199207	72334123
A10	ENSESTT00000056807		18	72201199	72217929
A10	ENSESTT00000056806		18	72201199	72218100
A10	ENSESTT00000056792		18	72276438	72279133
A10	ENSESTT00000056793		18	72326067	72326639
A10	ENSESTT00000056794		18	72367851	72401147
A10	ENSESTT00000056795		18	72688458	72707773
A10	ENST00000253159	ZNF236	18	72688458	72774998
A10	ENST00000320610	ZNF236	18	72688458	72807272
A10	ENSESTT00000056797		18	72717002	72734201
A10	ENSESTT00000056796		18	72717002	72734313
A10	ENSESTT00000056798		18	72737983	72747435
A10	ENSESTT00000056799		18	72815875	72819321
A10	ENST00000318747	MBP	18	72817767	72855988
A10	ENSESTT00000056804		18	72819098	72855989
A10	ENSESTT00000056803		18	72819230	72856028
A10	ENSESTT00000056805		18	72819273	72855988
A10	ENST00000281193		18	72819360	72828993
A10	ENSESTT00000056800		18	72820171	72823085

TABLE 3 (Continued)

A10	ENSESTT00000056801		18	72820171	72823085
A10	ENSESTT00000056802		18	72855561	72905291
A10	ENST00000309607		18	72867119	72867493
A10	ENST00000299727	GALR1	18	73088710	73109070
A10	ENSESTT00000052501		18	73089280	73095131
A10	ENSESTT00000052502		18	73092673	73095150
A10	ENSESTT00000052503		18	73461485	73463448
A10	ENSESTT00000052478		18	74655974	74657295
A10	ENSESTT00000052477		18	74836231	74837820
A10	ENST00000299466	SALL3	18	74839252	74857165
A10	ENSESTT00000052474		18	74853768	74856489
A10	ENSESTT00000052475		18	74854402	74861654
A10	ENST00000307671	ATP9B	18	74928369	75236360
A10	ENSESTT00000052476		18	74928431	74972951
A10	ENSESTT00000065967		18	75162658	75191977
A10	ENSESTT00000065966		18	75162658	75191981
A10	ENSESTT00000065968		18	75195603	75237133
A10	ENSESTT00000065969		18	75203116	75204817
A10	ENSESTT00000065970		18	75203163	75237133
A10	ENST00000253506	NFATC1	18	75254749	75345913
A10	ENSESTT00000065971		18	75255250	75270171
A10	ENST00000329101	NM_172387	18	75259369	75345913
A10	ENSESTT00000065975		18	75270434	75311108
A10	ENSESTT00000065973		18	75270434	75327154
A10	ENSESTT00000065974		18	75270434	75327154
A10	ENSESTT00000065972		18	75270434	75345394
A10	ENSESTT00000065976		18	75306857	75310062
A10	ENSESTT00000065977		18	75307549	75310062
A10	ENSESTT00000065978		18	75310647	75327154
A10	ENST00000334423		18	75314345	75314808

TABLE 3 (Continued)

A10	ENST00000334083		18	75363755	75810501
A10	ENST00000333925		18	75363758	75550986
A10	ENSESTT00000065979		18	75386139	75387291
A10	ENSESTT00000066012		18	75386888	75388300
A10	ENSESTT00000066011		18	75403966	75404501
A10	ENST00000327986		18	75415199	75415865
A10	ENST00000317008	NM_182570	18	75500963	75538593
A10	ENST00000299543	CTDP1	18	75538778	75613484
A10	ENST00000075430	NM_048368	18	75538925	75595497
A10	ENSESTT00000066010		18	75561698	75562628
A10	ENSESTT00000065980		18	75563836	75573932
A10	ENSESTT00000065981		18	75573941	75613484
A10	ENSESTT00000065982		18	75588015	75613484
A10	ENSESTT00000065983		18	75594535	75613484
A10	ENST00000316249	KCNG2	18	75722645	75758793
A10	ENSESTT00000066009		18	75761442	75762272
A10	ENSESTT00000066008		18	75761446	75762510
A10	ENST00000316111	NM_025078	18	75761465	75810007
A10	ENSESTT00000066004		18	75762569	75809829
A10	ENSESTT00000066005		18	75762569	75809829
A10	ENSESTT00000066002		18	75762569	75809842
A10	ENSESTT00000065999		18	75762569	75809843
A10	ENSESTT00000066000		18	75762569	75809843
A10	ENSESTT00000066006		18	75762650	75809829
A10	ENSESTT00000066001		18	75762650	75809843
A10	ENST00000262199	Q9H6D0	18	75762953	75802393
A10	ENSESTT00000066003		18	75763093	75809836
A10	ENSESTT00000066007		18	75774508	75775293
A10	ENSESTT00000065984		18	75823637	75826139
A10	ENSESTT00000065998		18	75825557	75831889

TABLE 3 (Continued)

A10	ENST00000269601	DIM1_HUMAN	18	75831846	75847511
A10	ENSESTT00000065996		18	75832383	75836894
A10	ENSESTT00000065991		18	75832383	75847550
A10	ENSESTT00000065993		18	75832384	75847452
A10	ENSESTT00000065995		18	75832396	75847330
A10	ENSESTT00000065994		18	75832490	75847391
A10	ENSESTT00000065997		18	75832541	75835766
A10	ENSESTT00000065992		18	75832715	75847514
A10	ENST00000306735	NM_024805	18	75893335	75905364
A10	ENSESTT00000065986		18	75893389	75901198
A10	ENSESTT00000065985		18	75893389	75905374
A10	ENSESTT00000065990		18	75893434	75905357
A10	ENST00000262197	Q8WZ65	18	75893473	75904914
A10	ENSESTT00000065987		18	75896424	75905374
A10	ENSESTT00000065988		18	75926233	75938117
A10	ENST00000262198	NM_014913	18	75966162	75997201
A10	ENSESTT00000065989		18	75989961	75992868
A10	ENSESTT00000052575		18	76004909	76006133
A10	ENST00000314741	PARD6G	18	76016631	76104208
A10	ENSESTT00000052576		18	76016997	76104406
A10	ENSESTT00000052577		18	76039710	76059638
A11	ENST00000319217.1	MPDZ	9	13096497	13240357
A11	ENST00000319198.3	MPDZ	9	13096497	13240357
A11	ENST00000276902.1	NFIB	9	14077605	14297550
A11	ENST00000331870.1		9	14194247	14194570
A11	ENST00000324876.2	NM_178566	9	14607036	14683474
A11	ENST00000276911.1	CER1	9	14710088	14712670
A11	ENST00000297595.3	NM_144966	9	14727207	14900993
A11	ENST00000324457.3	NM_144966	9	14727207	14900993
A11	ENST00000297593.1	NM_144966	9	14727207	14900993

TABLE 3 (Continued)

A11	ENST00000297615.2	NM_152574	9	15161561	15297250
A11	ENST00000336042.1	NM_152574	9	15161561	15297250
A11	ENST00000297627.1	SNAPC3	9	15412732	15455830
A11	ENST00000336277.1	SNAPC3	9	15412732	15455830
A11	ENST00000297635.1	PSIP2	9	15454067	15500982
A11	ENST00000285482.4		9	15542895	15613411
A11	ENST00000297641.1	NM_173550	9	15734586	15961895
A11	ENST00000318677.2	NM_173550	9	15734586	15961895
A11	ENST00000309604.2	NM_017637	9	16408579	16427061
A11	ENST00000317612.2	NM_017637	9	16408579	16427061
A11	ENST00000316584.1	NM_152576	9	16517183	16517287
A11	ENST00000297642.1	NM_017738	9	17125064	17485003
A11	ENST00000262360.2	NM_017738	9	17125064	17485003